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Letter from the Secretary of the Geographical Society at Bombay to the Secretary of the Royal Geographical Society of London.
Received 2nd May, 1833.

[IMMEDIATELY on the receipt of the following communication, the Council resolved to publish it with this Part of the Journal, as offering an example set by one of the most important dependencies of Great Britain, which it is hoped will be imitated by others. A frequent correspondence kept up, as here proposed, between Branch Societies in our distant Colonies and the Parent Society in England, could not fail to be attended with the most beneficial consequences to the progress of Geographical Discovery; and communications thus made could be transmitted either in manuscript or in print, and published as Appendices to the Journal of the Central Society. By such means, full advantage would be taken of the favourable position of England for extending geographical science; and the praise now due to the founders of the Bombay Society for having taken the lead in so desirable a course of proceeding, would be shared by those who may hasten to follow it.]

SIR,

I AM directed by the President and Members of the Bombay Geographical Society to request that you will take an early opportunity of informing the Royal Geographical Society of London, that an institution of a similar kind has recently been formed at Bombay, having in view the elucidation of the geography of Western India and the surrounding countries.

The President and Members of the Bombay Geographical Society feel satisfied that an announcement of this nature, transmitted from any part of the globe, would be received with pleasure and approbation by the Royal Geographical Society; but they flatter themselves that, coming as it does from a quarter whose localities are so interesting, it will be peculiarly acceptable to the Society, and will be favoured with its early attention and encouraging regard.

It is scarcely necessary to describe how favourable the position of Bombay is for the cultivation of geographical science, whether in reference to Hindostan in particular, or to the various regions and islands usually comprehended under the general name of India, and belonging to the Asiatic continent. Immediately to the westward of our Presidency lie the Persian and Arabian territories, to both of which access is rendered frequent, and comparatively easy, by the Gulf extending along the shores of the first, and the different seas encompassing three-fourths of the latter. Adjoining us on the north, we have the Malwa country, the seat of the celebrated cities of Ougein, Mandhow, and Palebothra;

and farther off in the same direction, the unexplored deserts of Tartary stretch towards the southern boundaries of the Russian empire. Turning the view eastward, we find ourselves in the neighbourhood of Thibet, China, and the Malay Peninsula, and in the range of the vast archipelago of the great Indian Ocean. With nearly all the regions above enumerated Bombay enjoys an intercourse either direct or indirect; and her port is the theatre of a commerce which annually assembles the inhabitants and the ships of many different and far separated countries.

But in enumerating the objects of geographical interest which exist in the neighbourhood of the Bombay Presidency, the Society does not intend it to be understood that it as yet possesses the means of pursuing or embracing them all, or even a considerable part of them. Nevertheless, it enjoys several facilities of the kind, which, if properly and judiciously directed, may lead to important and valuable results. From the extensiveness of the Honourable East India Company's dominion, European officers, military and civil, are found distributed over a vast tract of country, and possess full opportunities of acquiring a perfect local knowledge of their respective districts, either by personal observation, or through the medium of the natives, whose language they generally understand. On the other hand, the Honourable Company's ships of war are always cruising in the Arabian and Persian Gulfs, and in the Indian Ocean; and the naval gentlemen in command of them have already rendered important services to geography by their surveys and charts, and are capable of accomplishing much more in that way. The Bombay Geographical Society has already applied to the local government for permission to inspect the public records of the marine department; but as this cannot be acceded to without a reference to the Court of Directors, the Society will not enjoy the privilege in question until an answer is received from the latter authority, which will doubtless be a favourable one, as the Honourable Company have always shown themselves strongly disposed to encourage the scientific pursuits of their servants in India.

Possessing these advantages, actual and prospective, the Bombay Geographical Society is anxious to form a junction with that of London, and to be considered a branch of the latter; not only that it may in this way insure its own stability, but that it may acquire additional usefulness and efficiency from the patronage and counsels of the European institution. In accordance with these views, I am instructed by the Bombay Geographical Society to request that it may be permitted to associate itself with its prototype, the London one; and that a correspondence may forthwith commence between the two associations in furtherance of their common objects.

The Bombay branch will be happy to receive instructions from the London Society, in reference to the general plan of operations which it ought to adopt; and any geographical inquiries suggested by the latter will meet with due attention, and be answered with as little delay as possible. A circular, recently published by the Bombay Society, is herewith enclosed, as illustrative of the Society's views and objects; and it will be esteemed a favour if the London institution will transmit to its sister association at this Presidency any document, or prospectus, or code of instructions, which it may have promulgated with a similar design, and which may be in any way calculated for the instruction and guidance of the promoters of geographical science in Western India.

I have the honour to be,

Sir,

Your most obedient Servant,

J. Fraser Heddle, Secretary.

Bombay, June 6th, 1832.

Bombay Geographical Society.

In announcing the institution of a Geographical Society in Bombay, it seems requisite in a summary way to direct the attention of the community to its specific objects, and to point out how these may be best promoted and accomplished. But we must first remark, that it is a common opinion that geography, taken in its strict sense, includes merely a knowledge of the figure of the earth, and of its different divisions, and of the latitudes and longitudes of the various places comprehended in these, with a description of seas, harbours, coasts, and chains of mountains. This erroneous impression leads many persons to conceive that the study in question is a dry and unattractive one, when in reality the objects which it embraces exceed in number, variety, and delightfulness, those which fall within the limits of any other science whatever; nor is an individual excluded from pursuing it with pleasure and success, because he may be unable to use a sextant, or to take a survey of an island or bay, or discover the position of any particular parts of the earth's surface; qualifications of this kind being requisite in the cultivation of only one department of geography, instead of constituting the species of knowledge which forms the whole of the science.

Geography, in its proper and most extended signification, consists of three grand divisions, viz., the mathematical, the physical, and the political. Mathematical geography comprehends the determination of longitudes and latitudes, trigonometrical surveys of islands and coasts, the art of measuring the height of moun-

tains, and of making maps and charts, and also various subjects connected with navigation and the exploring of unknown countries. We conceive it unnecessary to speak at large of the extensive field for the cultivation of this department of the science which is open in our immediate neighbourhood, and which we have such favourable opportunities of visiting and inspecting; nor shall we do more than allude to the individuals within whose province the object in question will immediately be. The shores and islands of the Red Sea and Persian Gulf, and the archipelagoes which extend along the Malabar coast, are not yet accurately laid down in our charts; and a large proportion of the islets composing the latter remain unvisited and unknown, while the assigned bearings of the coasts of Arabia Felix likewise require verification by the nautical geographer. We look with confidence to the officers of the Indian navy for the gradual accomplishment of these objects, and their contributions in this department of the science will, we have every reason to expect, form some of the richest and most valuable of those materials which the Bombay Geographical Society anticipates receiving from its members and supporters. We may also hope for some assistance of a similar kind from another quarter. The commanders of many of the trading ships that enter Bombay harbour might often communicate useful information by allowing their log-books to be inspected by some qualified persons, with the view of comparing their nautical remarks upon questionable points, with those that had previously been recorded by other individuals. The Society will likewise derive considerable assistance from the observations of persons visiting the interior of India, who may possess sufficient astronomical knowledge to enable them to determine the latitudes or longitudes of some of the places that occur in their route. It is universally admitted that even the largest maps of Hindostan are extremely defective, and that most of the places of minor importance are inaccurately laid down. Hence, any traveller who would merely take the general and relative bearings of the towns and villages, and measure the distances between them, would do an important service to geography, and materially increase our local knowledge of the interior districts of India. It is more easy to contribute something to the mathematical department of the science than most people are willing to suppose; and a simple and accurate itinerary will in many instances prove more valuable and satisfactory to the geographer than a learned and theoretical dissertation.

We will now shortly explain the objects that more particularly fall within the range of the second, or physical, division of geographical science. These are, the history of the productions of the earth, whether living or inanimate, in so far as respects the extent

of their diffusion and the causes which operate in confining them to particular countries; the influence which climate exerts upon their qualities and external character; the migration of quadrupeds from one region to another; the history of the introduction of the graminæ and cerealia into countries in which they are not indigenous; the various physical peculiarities of the human race, such as complexion, conformation of features and bodily constitutions, with the causes of these; and, in short, all kinds of researches and observations that are calculated to make us acquainted with the local distribution of the animal and vegetable kingdoms, and to determine with precision within what particular geographical limits their various genera are confined. The countries lying around us afford abundant scope for new observations upon our own species, many of the singular tribes who inhabit India and its islands being as yet nearly unknown, or at least very imperfectly described. The nomade communities that wander in the jungles of the Mysore, the natives of the Andaman Isles, the Battas, a cannibal horde in the interior of Sumatra, the Papuas of the Eastern Archipelago, and various other nations, demand the early attention of the physical geographer, as they will in all probability sooner or later be extirpated, or at least will gradually lose their identity by intermixture with other races of people. The migrations and irruptions of different nations likewise come under this department of our science, as well as researches into the period at which any race of foreigners arrived in any particular country. We may inquire, for instance, how long ago it is since the Arabs first began to visit the eastern islands, where Islamism has, by their means, made such rapid progress, and is now so extensively diffused. Most of the great islands in the Eastern Archipelago being inhabited by two distinct races of men, one of which occupies the coast and the other the interior of the country, it will be interesting to those who enjoy the requisite opportunities, to study the causes of this anomaly, and to examine the physical peculiarities of each tribe, in order to ascertain whence they have respectively derived their origin, and which of the two are the aborigines of the soil.

The third division of our science is the political one, or, in other words, the geography of the human mind. Its principal objects are to examine the influence which climate, territory, and soil exert upon the character of nations and communities; to observe how far the different productions of the earth affect the manners and habits of those who cultivate and consume them; and to estimate the effect of geographical position in modifying the forms of government and political institutions of social men. An acquaintance with the annals, the traditions, the systems of religion, the superstitions, and the languages of different countries,

is essential to the advancement of political geography; and whoever contributes any information of this kind, however trivial it may appear to be, will promote the objects of the Bombay Geographical Society, and perhaps throw unexpected light upon some obscure part of the history of our species.

Let no one be startled by the number of the objects which we have enumerated as belonging to geographical science. It is not expected, nor is it possible, that any one mind (except that of a Humboldt) should embrace them all; but it is expected, and it is certain, that out of the variety presented to view, every person will be able to select some subject suited to his taste and to his opportunities of observation; and if he will make this his study, whatever it may be, and eventually communicate the result to the Geographical Society, he will do all that its warmest supporters either hope or desire. The difficulties which people residing in Europe experience in making any addition to geographical science can have no existence here, for a wide, and untrodden, and a profoundly interesting field of observation lies around; and however superficially we may turn up its soil, we shall be sure to find a reward for our labour. We therefore beg leave to call upon the civil and military gentlemen of this and of the sister Presidencies to render us all possible assistance in the prosecution of our design, and to send us communications without delay, leaving to themselves the choice of the subjects, and of the branch of geographical science to which these may relate, and requesting that they will not be too fastidious as to their form, or so diffident as to imagine that their contributions, however small, will not prove highly valuable and acceptable to the Society.

But it must be recollected, that an institution of the kind to which we have just been soliciting the support of the community, can neither become stable nor efficient unless it possess some definite and tangible materials which will serve as a foundation for its first labours, and a rallying point calculated to draw the attention of individuals to those objects which we are desirous that they should cultivate and pursue. For this reason it is proposed that the Bombay Geographical Society should lose no time in collecting a library, and also maps and charts of a description likely to assist the researches of its members; but as the Society's limited resources will not at present admit of its making any purchases of the kind, donations of books, &c., are earnestly solicited from those individuals who belong to the institution, or take an interest in its prosperity. Those volumes, which frequent reference and perusal may have rendered almost useless to their owners, will form acceptable gifts to the Society, as will also charts, atlases, globes, &c., whether new or old, or on a great or small scale. It

may be affirmed that a view of the latter objects is calculated more than anything else to excite a taste for geographical science, particularly if the beholder has previously made any progress in that branch of knowledge,—a map or chart is then like a panorama to him; for every coast which it represents suggests the name and discoveries of some celebrated navigator; in tracing the outline of a region or district, he sees its animal and vegetable productions embodied before him; and in the appellation and site of a town he reads a chapter of the history of the human race. It is therefore to be hoped that the members of the Society will contribute all that they can spare to the formation of a library; and they ought to recollect that their mutual donations will place within each other's command materials which would otherwise have remained in the exclusive possession of particular individuals.

The Geographical Society has likewise in view the formation of a collection of philosophical instruments for the use of those of its members, and the community generally, who may choose to borrow them for the purpose of making observations. As few of the requisite instruments are procurable in India, the General Committee of Management have resolved, that 400 rupees of the Society's funds shall immediately be employed in the purchase of mountain barometers, hygrometers, &c., from some approved maker in Europe.

It may be mentioned in conclusion, that a letter has recently been despatched to the Secretary of the Royal Geographical Society, acquainting him that a similar institution has been formed in Bombay, and proposing that a junction should take place between the two associations, in order that they may the more successfully pursue their common objects. A favourable reply to that letter, and to the one which the Bombay government have addressed to the Court of Directors in reference to the assistance to be granted to the Society, will probably arrive in eight or nine months hence, by which time it is reasonable to suppose that the Bombay Society will be in such a state of activity as will enable it to derive the most solid advantages from the support of the Court of Directors, and the co-operation of the Society established in London.

Bombay, June 9th, 1832.

PAPERS READ

BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY.

I.—*Journal of a Tour through Azerdbijan and the Shores of the Caspian.* Communicated by Colonel Monteith, E. I. C. Read 13th February, 1832*.

Having been ordered by His Royal Highness Abbas Mirza to visit the whole province of Azerdbijan, immediately under his government, as also the province of Ghilan and the shores of the Caspian, I proceeded, in the first instance, to the summit of the lofty mountains of Sahend, situated between Tabreez and Maraja, in themselves forming a most remarkable geographical feature, standing, as it were, isolated in the very centre of Azerdbijan, and towering to the height of 9000 feet above the level of the sea. From these mountains run the streams supplying Tabreez and its districts, as well as Maraja, with their only good water. I had every facility given me for employing instruments, and remaining what length of time I judged necessary in situations through which travellers have been obliged to pass with great rapidity, as well from the want of supplies as on account of the danger from the Kurdish and other robbers who infest the whole frontier. From Tabreez I proceeded—on the first journey, 10th of August—along the banks of the Bosmitch River, which I was directed to follow to its source, and ascertain if any of the streams which flow from that mass of mountains, Sahend, could be directed into it. For four miles the road lies through a narrow valley, entirely occupied by the suburbs and gardens; the latter are entirely irrigated by canals from the river before mentioned.

The climate here is much cooler than at Tabreez, and there is a difference of fifteen days in the time of the fruit ripening between this and the western side of the town. On the right hand is a low range of clay-slate hills, mixed with gypsum, amongst which some slight traces of coal are visible. On the left hand

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* Colonel Monteith having also presented to the Society an original survey of part of Persia and Armenia, which the Council resolved to engrave on a suitable scale, the publication of this Memoir has been postponed till the Map was also ready. It is now on sale with all map-sellers, in four sheets, elephant folio; and a skeleton outline of it, reduced, is here also subjoined.

the hills are much higher, and present a broken, abrupt appearance, being generally composed of pudding and sand-stone, highly coloured with iron, and shattered by the numerous earthquakes to which Tabreez is subject. At the twelfth mile I reached the fine village of Bosmitch, situated on a small plain three miles in diameter, generally swampy, and the climate sensibly colder than that of Tabreez. As the celebrated Cave of Secundereah, resembling the Grotta del Cane in Italy, was only distant six miles, I proceeded to the village of Secundereah, situated at the mouth of a very strong defile formed by the river of Sied Abad; and having procured a numerous party of villagers with tools, combustibles, &c., set out, determined fully to examine the Cave, or at least to ascertain to what extent the noxious vapour existed; we also took some fowls to see the effect produced on them. After a fatiguing walk of three miles, up a rocky and steep ravine, we arrived at the entrance of this singular cavern, the mouth of which was fifty feet wide and thirty feet high, descending very rapidly to a depth of thirty feet.

The guides set fire to some brushwood, and found the air much less noxious than usual; and it was only after a descent of 10 feet that we felt any inconvenience. We were absolutely standing on the bones of some animals which had perished there upon a former occasion; we remarked a dog, a deer, and two foxes: the head of a wolf lay at some distance. We, at the same time, put to flight a great number of pigeons, who build in the roof of the cave. We found that fire was extinguished at a few feet below where we stood; and the fowls died in half a minute. The sides of the cave had many marks of sulphur in powder amongst the soft sand and limestone, which were also strongly coloured with iron. Though the fire, made with dry brush-wood and thorns, even when sprinkled with naphtha, was instantly extinguished, portfires and fuses burnt nearly the same time as in the open air. I was, therefore, enabled to fire a quantity of gunpowder at the very bottom. The quantity amounted to several pounds at a time, and that repeated often, had the effect of so entirely filling the cave with smoke, that we could no longer see anything at the bottom. On again throwing in some fowls, they soon made their escape, and fire burnt at the bottom. I would not, however, allow any of the people to descend, which they appeared willing to do; a dog also ran in, and returned in a few minutes. On a former occasion, when this cave was visited by a party of the mission, accompanied by Mr. Browne the celebrated African traveller, fire would not burn two feet below the entrance, and oppression was felt close at the mouth of the cave. Mr. Browne entered some paces by holding his breath, but an English officer attached to the mission had nearly perished in attempting

to follow him. He was instantly dragged out, and recovered with some difficulty. In the winter (subsequently to my second visit), after a strong gale of wind from the N. W. had blown for some days directly into the mouth of the cave, we were enabled to walk all over it, and only in a deep hole, at the bottom, did there exist any noxious air. There a fowl died in two minutes, and from its cries appeared to suffer much. After sixty feet we found the cave again ascended, and curved a little to the right: it then became exceedingly narrow and very low, forming a kind of passage, which did not allow of standing up; we could not see to the end of this, even with a reflecting lamp, and none of us felt inclined to prosecute the discovery. I have only mentioned these circumstances to prove how much the extent and force of the vapour are affected by the state of the atmosphere and by particular circumstances. As the ground slopes rapidly from the mouth of the cavern, both to the ravine and inwards, it might be cleared away with little difficulty, and the heavy noxious gas thus allowed to pass off; but with the exception of forming a large winter stable for sheep, no other good purpose could be answered by it. There was formerly a human skeleton, which has been removed; it was that of an old man in the village, who, tired of life, took this way of ending his misery. The peasants considered the circumstance of the cave being accessible little short of a miracle, but were much disappointed at not finding the treasure said to have been deposited there by Alexander, from whom it derives its name.—Returned to Bosmitch.

The river here comes from due south, through a stony but fruitful valley; the village of Lewan is sixteen miles above. Here the harvest is two months later than in the plain, and from this the ascent of the steep part of Sahend commences. The valley now becomes a narrow and deep ravine, presenting many curious masses of a very soft sandstone, pierced with innumerable holes, like a honeycomb, and in which the people have excavated many stables for keeping their cattle and sheep in winter, as also their grain, &c. After three miles I passed some tepid springs, strongly impregnated with iron, which encrusts the margin of the basin with a red substance. The ascent now becomes very steep along the banks of the same stream—here a narrow but rapid torrent; and at twelve miles I reached a small level spot, covered with spongy moss, with some very deep holes, and a small lake, formed by the melted snow, which, however, in sheltered spots, never melts at this height. I found that water boiled at 196° of Fahrenheit, which, by adding 300 feet for the ascertained height of the nearest peak, gives an approximate height of 8500 feet above the level of the ocean. From this point Mount Ararat was visible, (being N. 38° W. by compass,) and the whole of the country

properly called Azerdbijan. I remained encamped here for four days, and found the thermometer never above sixty, and at night it always froze; the greatest cold was 27° of Fahrenheit. Having visited the sources of all the streams flowing from Sahend, I ascertained that, with the exception of the Karangoo, which runs through Hushlerood into the Kizil-Ouzan and the Caspian, the whole of them fall into the lake of Rhumia. The weather was invariably clear and fine, and enabled us to take very correct bearings of the principal points on the map. Finding that none of the streams were available for the purpose required, I descended the mountains along the Karangoo river into the district of Hushlerood (eight rivers), and halted at the fine village of Khalifa, from which to Sares-Kend, the capital of the district, is fifteen miles, where I determined to halt for some days for the purpose of visiting the ruins called Culla Zohak, so celebrated in Persian romance as the residence of a tyrant, who daily sacrificed two of his subjects to the snakes by which he was tormented. This, however, only proves that they were of greater antiquity than the people of the country could now account for. Early on the following day, I descended the small brook of Sares-Kend, which, at the fourth mile, falls into the Karangoo, here a considerable stream. We forded it with some difficulty, and ascended the steep rock on which stands the fortress: though part of its walls are built on the precipitous rocks, under which runs the before-mentioned river, it was two miles before we could reach what had formerly been the gate—every where surrounded by deep ravines, that on the right formed by the Shoor Chie, a small stream coming from the south, and so salt as to be unfit for use. On entering the ruins, it was very easy to perceive that they had been built long before the Mahommedan era, as well from the solidity of the construction, as from the semicircular arches, and the total absence of the Arabic architecture. In fact, not a single inscription in that language was to be seen, and it was most probably ruined before the conquest of this part of the country. It appears to have formerly consisted of two fortresses; the one on the south, which is the strongest and highest, and the other on the north side, which I imagine must have been a palace. One light and beautiful semicircular arch, which must have been a door or a window, still stands on the abrupt precipice, looking towards the Karangoo. It is 14 feet high and 8 feet in diameter; over this I was told, a stone slab, with an inscription, formerly existed, but I in vain searched for it among the ruins, although I cleared away all the rubbish which had fallen under the arch. My guides told me it had only lately fallen, or been taken down, for they perfectly recollected it, with some unknown characters on it, and they supposed that, with other hewn stone, it might still be found

at the residence of the Khan at Sares-Kend, for the construction of which a quantity of materials had been removed from these ruins. No other inscriptions of any kind were to be found; but I have not the least doubt that it is the ancient Atropatana, which has been erroneously supposed to be at, or near, Miana. The two fortresses are distant 500 yards from each other, and joined on the south-east side by a strong wall, flanked with towers. The southern castle has them much nearer than the other, and is better provided with loop-holes, still in good preservation: the walls also are stronger, and the whole appears to have been a kind of keep to the remainder of the fortress. These two castles are joined on the south-east, along the steep brow of the hill; on the north-west no junction was necessary, as the rock has there a perpendicular height of 200 feet. A tradition is still preserved of the siege of this place by the forces of all Persia, when driven to revolt by the cruelty of Zohak; and they pointed out the stations occupied by the troops of Khorasan, Arabia, and Fars, indicated by a number of semicircular intrenchments of loose stones, about four feet in height, exactly resembling the camp occupied by Nadir Shah, in his Turkish wars. Its natural strength would have pointed it out as a proper position for a frontier town, such as Atropatana is described to have been; and the fertility of the surrounding country, its abundant supply of water, and its being in the direct line which the road must then have followed from Parthia to Ganzaca confirm the conjecture. (It could not have been Tabreez, as stated by most authors.)

Having followed the river which here flows through a deep rocky ravine to a point where I had formerly traced it up, I returned to the salt mines, twelve miles south of Zohak; and there crossed a high range of hills which bounds the district of Tap-Tap, now entirely abandoned to the great tribe of the Shekakies, who pasture their cattle there during the summer months. I descended by a very difficult road into the bed of the Subliga, one of the branches of the Jagatty. On the following day I went to Lylau, near which a large dam had been constructed across the river, at this season nearly dry; and immediately in the vicinity of this village I saw extensive ruins of those solid mounds of earth which characterize all the ancient cities in Persia. The people could give us no information regarding them, except believing that they had been built by Europeans, and destroyed by the first Mahommedan conquerors. The extent of the walls can be very imperfectly traced, and the river appears frequently to have changed its course—a thing not to be wondered at from the perfect level of the country, and the soft nature of its banks. During the spring the greater part of the plain is under water, either from the overflowing of the Jagatty, or of the Tatowa, distant only three miles from each other. It has at all times

been celebrated for the abundance and excellence of its pastures, and from that cause was the favourite residence of many of the Tartar princes. The city of Tabreez appears to be considerably too far north to agree with the position of Ganzaca, which these ruins do; and is situated in the coldest and most barren part of Azerdbijan, consequently little calculated to answer the purpose of winter quarters for so large an army as that of the Emperor Heraclius during his second expedition into Persia. They are also near the junction of the three roads leading from Ctesiphon, the then capital of Persia, by Senna, Soudj-Bulak, and Burrandizi. The ruins are about fourteen miles in circumference, and their greatest extent is from east to west. The city has been entirely composed of sun-dried or mud buildings, nor is there any that attracts attention. However, several villages have been built recently on its site, and for many years people have been employed to work the earth for saltpetre, which must have destroyed any ruins that might have existed. I searched the whole plain as far as the lake of Rhumia, here only a few inches deep, but could find no other ruins of consequence, except at Satelmish, where, on a small limestone rock, are still to be seen the ruins of a fire-temple, but of no consequence. A Kurdish chief told me of another *European city*, now in ruins, called Sheher-Subz. I went thirty miles with him on the Soudj-Bulak road, and only saw a small, but very ancient, fortress, evidently intended to guard this principal entrance into Kurdistan, without either inscriptions or ruins of consequence. Twelve miles from Soudj-Bulak, and not far from this, was one of the best preserved fire-temples I have seen in Persia. It was supported by eight columns hewn out of the rock, and accessible only by a ladder; the altar was perfect, as also some tolerable sculpture of priests attending the sacred fire, precisely like those of the Sassinian coins. Some arrow-headed inscriptions were said to exist, but we did not succeed in finding them.

Having finished the survey of this plain, I again ascended the Jagatty, which, at six miles from Lylau, flows through a narrow valley, highly cultivated, and full of villages. At the thirtieth mile I reached Sienkulla, the capital of the district so called, near which is the junction of the two principal branches of the Jagatty; the one which I intended following coming from the Tukht-Suliman, the other from near Banna, in Kurdistan. This being a principal station, I remained four days to make astronomical observations; and then proceeded along the eastern branch of the stream, and soon entered a very narrow valley, which we continued to ascend with very lofty mountains on our left hand, forming part of the mass called Sofa Khona. At the eleventh mile I crossed a range of hills, through which the river had forced a very

narrow passage, not more than 20 feet wide, the rocks standing perpendicular on both sides. Immediately on descending I again came to the river, on the left bank of which is a spring, strongly impregnated with gas, like the Seltzer waters. It is in a small round basin, of four feet in diameter, and elevated about three feet; though the water is thrown to the height of 30 inches little runs out. The reservoir has evidently been formed by the gradual deposit of the waters. It is called in the country Yakout Buttak, as emeralds are sometimes said to be thrown out. I picked up a small piece of green quartz chrystal, which may probably have given the name to the spring. At the twentieth mile I crossed another range, called the Sursat, and then marched over a very elevated tract of level country for ten miles, when we arrived at the small village of Youngally, inhabited by Kurds of the Mekrie tribe. On our left were the mountains of Balcas; on the top of which is a Mahommedan tomb, called Yakoub Ansar. The country over which we passed for the last ten miles was 5000 feet high, cold and barren, and the few Kurdish and Afshar villages poor and wretched; we with difficulty procured at any price the necessary supplies for ourselves and cattle. On the following day we marched over a richer country, watered by several fine streams from the mountains of Balkas, and at the fifteenth mile reached the castle and village of Cherak Tihha, the residence of Mahomed Khan, chief of this branch of the Afshars, situated on the banks of the Serifshan River, which is the principal source of the eastern branch of the Jagatty. Having procured a party of horsemen, we proceeded over some very rugged ground five miles in an E. S. E. direction, when we came to the ruins of the palace erected by Suliman, one of the first califs of Bagdad. It is a fine quadrangular structure, built round a natural basin of 70 yards in diameter, and presenting one of the most singular phenomena in nature. A small channel, of four inches wide and three deep, carries off the superfluous water, which appears to be considerably agitated by a strong spring; on a nearer approach this is found to be occasioned, like the smaller one of Yakout Buttak, by gas, which is only confined by the body of water through which it forces its way. The water flowing from this fine reservoir forms small pools outside the gates, and a deposit of tufa immediately takes place, of which the whole hill is composed, and has most probably been formed in a similar manner, though it has now reached a height of 300 feet. The water appears to occupy a greater space below than above, but all the line I could procure (400 feet) was insufficient to find a bottom, either at the side or centre, where I was able to go on a raft. The whole of the mountains about appear to be of a similar formation, and the brooks are almost filled up by

large masses of a light porous tufa. Madrepore* is also abundant. The palace is highly ornamented in the Arabic manner, and has been one of the best modern buildings in Persia. To the north, on the top of one of the highest peaks of Balkas, stands a strong castle, with four towers, and about 100 yards of a side. I could not ascertain to what era it belonged, but imagine it was far anterior to Mahomedanism, and probably was a fire-temple of the later period. It had no Arabic inscriptions, which everywhere cover the walls of the lower buildings. After a minute survey of the palace, and getting some of the Arabic inscriptions copied, which were only verses from the Koran, or moral sentences, I proceeded to a remarkable peaked hill, about two miles to the south-west, called the Zendan, or prison. With considerable difficulty we scrambled up to the top of the hill, which is higher and steeper than the former, but of a similar formation. On reaching the top I found an immense hollow of the same irregular form, with signs of water having been considerably agitated against its sides, but in other respects exactly resembling the crater of a volcano. The eye could not reach the bottom, so that I could not ascertain if there was still water; the diameter of this was considerably less (perhaps forty feet). We descended with even more difficulty than we had clambered up, and commenced a strict search round the base, to ascertain if water had ever forced its way through the mass of rock. On the western side the hill appeared to be less compact than in other places, and a considerable channel, in which there is now no water, has been washed away apparently by a rapid current. I, therefore, think it not impossible that this hill, like the former, had once been the same kind of basin, gradually formed by a deposit of the water, which, at last, on reaching a height beyond which the sides were unable to resist its pressure, found a passage through the lower part. Whether this is the case or not I leave to the decision of more able geologists than myself; but the fact is undoubted, that this mass of mountains in the neighbourhood, 7500 feet high, appears to its very summit to be composed of the same light deposit. In the south-west extremity are extensive mines of sulphur, and a white substance was shown me, which they used in their sherbet, of a pleasant acid taste; they praised it as being an excellent tonic. The disturbed state of the country prevented my remaining longer in this quarter, and the season was getting too far advanced for the mountains, which are now abandoned by the Illiats, or wandering tribes. Our journey lying over the highest part of the Balkas, we ascended the Serifshan stream, which, at the third

* Strange as this may appear, madrepore is found in great abundance through Azerdbijan, and, in some places, is actually in a state of formation by small insects inclosed in a substance like straws.

mile, issues from a narrow valley, about one mile in length. It passes through the village of Koom Tippa (sand-hills) from a remarkable round mound of stones and soft sand, situated in a recess of the valley; from this commences the steep ascent of the mountains, leaving the stream on our left. At the third mile we reached the top, from which we had a most extensive view, and could judge of the height at which we were from seeing the tops of all the secondary mountains of Azerdbijan far below us; if any conclusion can be drawn from the boiling point of water, we were from 7500 feet to 8000 feet above the level of the sea, but we found no snow, though the water was frozen at eight o'clock, on the 12th of September. We remained at this point until four o'clock in the evening, to make observations, when we descended by a very difficult road, and at the third mile reached a small stream, which I found to be the head of the Eye Dagemish river, which falls into the Karangoo, near Miana. We continued ascending and descending numerous ravines, for five miles, to Sied Kenday, a Shekakie village, which we found abandoned, and with difficulty could persuade the guides and guards to proceed, there being then a feud between the Afshars and Shekakies, in whose country (the Shekakies) we now were. At the fifteenth mile we came to Kara Dash; the Chief requested us to pitch our tents at some distance from his castle, but ordered us to be provided with everything, and paid me a visit late at night. He was an Afshar, but not on good terms with the chief we had just quitted. An old castle called Gour Kulla, built on a dark-coloured rock, is immediately below the village, but possesses nothing worthy of remark. We continued to descend for the space of fifteen miles, when we came to the fine village of Yengaga, nearly concealed by gardens, in which even pomegranates grew, so much had the climate changed in the space of forty miles. Having always considered the Kizil-Ouzan as the frontier of Azerdbijan, and government of Abbas Mirza, I was not a little surprised to find the Zenjan princes' authority extended over three large districts, besides many villages, on this side.

I mention this circumstance as showing how precarious are divisions and geographical descriptions of the Persian empire. My orders could be of no avail under a prince (Abdalla Mirza), who made no secret of his ill will towards the heir apparent. The natural hospitality of the Persians, however, overcame all difficulties, and I found equal, if not greater, facilities granted me by the chief Abdalla Khan. He not only gave me a kind and hospitable reception, but accompanied me to the lead mines of Ouriard, in which district I then was. These mines have never been regularly worked, nor perhaps are capable of any very great advantage being derived from them. A thin

vein of very rich grey lead ore extends through a hard schist rock, close to the surface, for nearly six miles, never distant more than a few inches below, but has not been found to extend beyond that depth. The specimen I tried yielded, in a common forge, 70 per cent. The hills are here covered with a low brushwood, fit for charcoal; the borders of the river supply a considerable quantity of willow and other light wood. Having lately been accustomed to the cold air of the mountains, we found the confined vallies of the Kizil Ouzan disagreeably hot. The water here became rather brackish; though used by the inhabitants and cattle. At two miles from Yengatcha, we reached the banks of the Kizil Ouzan: at this season only a shallow and narrow river; but in the spring of the year, or from April to July, the melting of the snow renders it passable only where bridges or ferries are established. The river is here confined by high mountains, which sometimes obliged us to quit its banks, but the road was generally practicable for troops, and one for carriages might easily be made.

At the tenth mile we came to a very strong defile, which had formerly been defended by a fortress on the right bank. This also dates its existence from the most remote antiquity. Neither inscriptions nor any thing remarkable are to be met with. This pass is called Derbund, or gates, forming a natural fortress, into which the inhabitants retire, with their families, &c. in times of war. At the thirteenth mile the country opens, and a stream flows from the north-east, called the Kulla Chic. At the fifteenth mile we passed a brackish stream from the right, which was encrusted with salt, and unfit for use; at the seventeenth mile another stream, from the right, called Mekrawan, from a village sixteen miles higher up; and at the eighteenth we halted at Kara Butta, a large village of Afshars, where one of those strange scenes took place which are so frequent in this wild country. The chief, brother to my host of Yengaga, had proceeded to a camp of the Shekakie tribe, to arrange some dispute regarding the lands on the banks of the river, and was shot during the conference. The whole country was in alarm, and the other villagers flocked to the residence of their murdered chief; the small clan who had perpetrated the outrage fled, but being certain of support from their numerous and warlike tribe (Shekakies), the other party assembled, as well to save themselves from being plundered, as to endeavour to revenge the death of their chief. On the following day I marched as early as possible, descending the river. At the sixth mile the Zenjan River falls into the Kizil Ouzan, which I followed nine miles farther to the village of Kulliga, on the right bank. Having formerly traced the river from Miana up to this point, I here quitted its banks, and struck immediately over the

range of the Koflau Kous, much lower than the road at Miana; in fact, there was no obstacle whatever even for carriages. It was eight miles over a gradually rising country to the village of Karagalla, and, at four miles farther, I reached the banks of the Eye Dagemish River, with Sheikhterabad three miles on our left. Near this are the celebrated copper mines, which, perhaps, for richness and facility of working, are not exceeded by any in existence. The country is, however, destitute of fuel—a certain supply of which is only to be found at a distance of one hundred miles, or five days' march of mules. The river supplies an abundant power for working machinery, and under better management the mines could not fail to be highly productive. At three miles farther I passed the Karangoo, near its junction with the Eye Dagemish, now a considerable stream; from this it is two miles to Miana, where the heat (16th September) was still very oppressive. I searched the country in every direction to ascertain if there existed any ruins which could indicate the site of an ancient city (Atropatana), but without success. This miserable village is considered the capital of the fertile district of Gerniarood, but was nearly ruined by the Russians in their late invasion of Persia. It is much dreaded by all travellers, on account of a kind of poisonous bug, said to be fatal to strangers; more than one of the servants of the British embassy have suffered in passing through it, (the patient showing all the signs of a malignant bilious fever, with frequent relapses, terminating in death even under the care of our best surgeons); but whether owing to the fever for which the place is equally celebrated, or the bite, has never been fully ascertained. A division of the Russian army passed the winter there, and I believe no well-authenticated case of that nature occurred. Many of these insects were brought to me; but as some of the same kind had already been sent to England, I did not think them worth preserving.

We descended the fertile banks of the Karangoo, here called the Miana River, over which is a bridge of fifteen arches in good repair. The water at present flows only through three of them; the remainder serve as shelter for the caravans, which seldom enter the town, on account of the poisonous bug before mentioned. At the fifth mile the Kizil Ouzan forces its way through the mountains of the Koflau Kou, forming a defile hardly practicable for loaded cattle. The rivers, when united, take the name of the Kizil Ouzan, running through a broad valley, covered with brushwood, and dividing into many shallow branches. We were struck with the number of water-snakes, which are said to be venomous, though I could not ascertain that either men or cattle, though constantly employed in the rice-fields, had ever suffered from them. At the twelfth mile we passed a fine village on the left

bank of the river, called Mamau, through which passes the great Ardabile road. The pass of the Koflau Kou is here practicable for carriages, and would offer no obstacle to the march of an army. Three miles below this the road runs along the brow of a steep mountain, and forms a very strong defile with the river running through it one hundred feet below where we stood. For two miles and a half the road is still very difficult and dangerous; we then descended into the bed of the river, and passed round a high perpendicular rock. The road is then tolerably good to Koubulak, making a total of twenty-one miles and a half. On leaving the village the road is steep and difficult, forming a pass still stronger than the one we passed yesterday. We crossed some rapid streams, which descend from the Midan Daug, and, at two miles and a half farther, passed the village Khalack, with some fine gardens on the banks of a stream of the same name. One mile and a half from this is a fine bridge of six arches over the Kizil Ouzan; and at the distance of a mile below, the mountains recede, leaving a small space of table land, which ends precipitately at the river on both sides, here very difficult of approach: one mile from this we descended by a difficult and stony road to the banks of the river, which are well cultivated, and passed another ravine from the left, called the Sukus Chie. At two miles farther the river is again shut in by high rocks; the route is scarcely practicable, and has only been rendered so, in any degree, by blasting, but never having been finished the passage is still dangerous; the road is then tolerably good to Alwar, where we halted. This day's march was only twelve miles and one furlong, but was very fatiguing to the men who drove the perambulator. Half a mile from the last stage we passed the valley of Miskeal, and, at two miles farther, that of the Kabak Chie, thickly wooded with willow and low bushes. We here entered the district of Khulkhal, extending a considerable distance on both sides of the river. Immediately on crossing the stream we ascended to the table-land, and, after a mile and a half, again descended, by a zig-zag and steep road, into the bed of the river, along which we continued for a mile and a half, when we turned up the valley of Muzra on the left, highly cultivated and filled with gardens, belonging to the village of the same name, which we reached after a march of a mile and a half farther. Having changed our guides we descended into the bed of the Kizil Ouzan, which we followed, as nearly as the nature of the country would permit, for seven miles, to the small town of Hisigine, situated on a rising ground near the river, and very well calculated for a military post, to defend the passage of this difficult defile. The town contains about three hundred houses. The inhabitants carry on a considerable trade with Ghilan, to which province they carry cotton and grain, and have

two hundred packhorses, which they hire to the merchants. We quitted the banks of the Kizil Ouzan, which are considered nearly impracticable. Our route lay over a rugged and very difficult country much cut by ravines, so closely resembling each other, that we could not easily find the road. The hills were generally of a mouldering clay-slate, with their veins of sulphate of lime. At the eighteenth mile we entered the valley of Berendeh, in which stands a considerable town, beautifully situated on a river of the same name, which rises on the lofty mountains of Auk Daug (White Mountain); it contains 1200 inhabitants, and the valley and sides of the hill form a perfect forest of fruit trees and vines—it depends on Khulkhal. The inhabitants of this town being principally Sunnies, had much reluctance to accompany us as guides, being generally ill used by their Sheah countrymen. That difficulty being overcome, we continued our route for four miles over the same kind of hills as yesterday; we then reached the ruined caravansera of Mianserai, situated where the valleys of Berendeh, and the Sha Rood unite; the country was beautifully wooded with the lofty mountains of Ghilan, close on our left hand. This part of the country abounded more in game than any other place I ever saw. Innumerable partridges, hares, and wild hogs, were constantly crossing the road, which, for four miles and a half more, lies over three ridges of low hills, covered with trees, and well watered. The road then lies for fourteen miles through a beautiful valley to Durram, in the district of Tahram, a fine village, near which is situated the palace of the Prince of Zenjan, who usually passes some part of the winter here. He has begun a bridge over the Kizil Ouzan, fordable only when the river is very low, and even then not without considerable difficulty; the river does not run more than two miles an hour. This was the first place where we observed the olive tree, a few of them being cultivated in the garden of the prince. The high mountains of Ghilan bound the valley on the right, at the distance of six miles, throwing branches nearly to the river. They are never perfectly free from snow, so that this valley enjoys, in that short distance, the advantage of every degree of temperature. The mountains on the opposite side are a continuation of the Koflau Kou, but are much higher than at Miana; and from the great accession of fresh water the river is no longer brackish: the mountains being covered with a stunted oak forest, present a green and luxuriant prospect. We were most hospitably entertained by the servants of the prince of Zenjan, and the following day continued our route down the valley, which presented features exactly similar to those already described. At the twelfth mile we halted, to breakfast at Kullat, another fine village, surrounded by some of the largest trees I ever saw; the walnut grew to a height of fifty and sixty feet, and some of the plane trees

were really gigantic. Immediately opposite to this, on the other side of the river, are the ruins of an ancient castle; the people assured me there was nothing to be seen, and I found the ford both difficult and dangerous. It is built of stone, and stands on a low hill near the river; there was nothing remarkable about its appearance. We followed the valley for about twelve miles, and then turned off to Ziterabad, distant one mile and a half from the river. The inhabitants had moved higher up the mountains, on account of the heat, leaving only a few watchmen to look after their property; the olive was here a common tree. We marched at a very early hour through a highly cultivated country, with numerous fine villages, and at the thirteenth mile came to the ruins of what must have once been a considerable town, called Byram Abad, and on the opposite side of the river was a fortress of some celebrity from commanding this pass. It was called, like everything the people were unable to account for, Giaour Kulla (Fort of the Infidels); it is destitute of inscriptions or sculpture, but of considerable strength and extent. The valley here becomes thickly wooded near the river, and six miles higher up the soil is stony, sandy, and little cultivated. At the tenth mile a high mountain approaches near the river, along which a road has been cut with much difficulty; and at one mile farther we crossed the bridge of Menjile, a modern structure of no importance. A small town of the same name is situated one mile and a half from the bridge, the entrance to which is through an alley of very large olive trees, which are here cultivated to a great extent; the export of oil and soap is very considerable; the fruit is very little used as food. It is a singular circumstance, that this district, and the pass of Roodbar, are the only parts of Persia in which this tree is indigenous. As Menjile was a very important geographical position, I determined to halt for some days to enable us to examine the valley of the Sha Rood, or southern branch of the Kizil Ouzan, which is celebrated as having been the residence of the chief of the Assassins, or Old Man of the Mountain. Since our entrance into Tarim, which is after leaving Berendeh, we found the people only spoke Gilla or Taut, and but few even understood Turkish or Persian. This I imagine must at one time have been the most general language of the whole empire, for it differs little from the Lack, Loor, and Kurdish. Even in Mazanderan, where the people speak the most barbarous language in Persia, it appears to be only a corrupted dialect of the Gilla; and I have often found solitary villages in the remote mountain districts of Karadaug and Karabaug speaking the same language.

During our stay at this place we were much incommoded by a strong wind, which invariably began to rise at about eleven o'clock,

A. M., and continued to blow until near midnight; it was sufficiently powerful to blow down our tents, until fastened more securely than usual. A thick fog generally covered the top of the mountain, but there was seldom rain: the people said they considered it the greatest blessing, and without it they would, on account of the heat, be unable to inhabit the dry spot where the village is built, backed as it is by a naked rock, which powerfully reflects the rays of the sun. This wind only extends a few miles up the valley, and we did not fall in with it at a distance of eighteen miles from the entrance of the pass.

The height of Menjile is not more than eight hundred feet above the level of the sea, as shown by boiling water; but this would be rather more than a thousand above the Caspian. Having been previously well informed respecting the existence of the fortress inhabited by the Assassins, and several respectable people at Kasbine having offered to accompany me thither, I was surprised at all the inhabitants of Menjile declaring they never had heard the story, and were ignorant of the existence of the ruins. Knowing that they were situated on the banks of the Sha Rood, I determined to follow that river to its source, or until I found the object of my search. On the following day I ascended the valley over a most excellent road, and forded the river with great difficulty at the seventh mile, to look at some ruins which proved to be of modern construction. I passed, at the twelfth mile, Loushan, and, at the twenty-eighth, Berenzini, where we learnt that the object of our search was still distant thirty-five or forty miles; the road was good throughout, and the valley about three miles broad. We continued to ascend the stream on the same side, and found some of the Illiats had already taken up their winter quarters in the valley. After a long and fatiguing march of thirty-six miles from Berenzini, we reached Jiraudey, just where the stream from the mountains of Ala Mout, in Mazanderan, which are perpetually covered with snow, joins the stream of Kherzau, coming from the mountains behind Kasbine. We now commenced the ascent of a rugged and steep mountain, on the top, or rather round the sides, of which (for it enclosed a considerable portion of the upper part) ran a wall strongly built of stone. On the top is a tower, which, being totally enclosed within, the outer wall was probably solely intended as a look-out. On one side, over a deep ravine, appears to have stood a considerable residence, and it formerly had a communication by a narrow staircase, with a garden below. The lower part of the mountain has been formed into terraces, but the whole is far from answering the description of the terrestrial Paradise described by some authors; the climate is decidedly cold, and for at least half the year it must have been a disagreeable habitation. The power of this chief, whom I cannot help con-

sidering as the head of some religious sect of the Ismailites, is said to have extended over both the districts of Taroom and Rood Bar; that is, the princes who then governed Persia, allowed him to collect the revenues of those districts as a bribe for his forbearance, or to secure his aid against their enemies. The limits of this paper will not allow of a discussion regarding this sect, concerning whom volumes have already been written. Being originally schismatics in the very commencement of Mahomedanism, they were persecuted with unrelenting cruelty by the first califs, and ultimately had recourse to assassination as a defence against their powerful enemies. They derive their name of Assassins from the corruption of Hassain, one of their most celebrated leaders. There were several divisions of them scattered through Syria, Kurdistan (near the Cape of Wan), and Asia Minor; but all acknowledge as Imaum, or high priest, the chief residing at the place here mentioned. Innumerable anecdotes are still related of the address with which they introduced themselves into the service of the greatest men in Asia. More than one prince, who undertook expeditions against them, were killed before arriving at their castle. Houlakoo Khan, grandson of Gengis, took this fortress, and put many of them to the sword; they, however, must subsequently have succeeded in re-establishing themselves, as Timor again undertook an expedition with his usual success. In the building I visited there are no inscriptions. A bath reservoir and extensive place are the only buildings now remaining. Descending the valley by the same route, we came to within twelve miles of Menjile, when we crossed a range of high-wooded mountains, to visit the alum mines, near the village of Surdar.

The mineral is very abundant, and worked with great care; there are always eight boilers at work, and the mines are rented for 2000 tomans (about 1200*l.* sterling) per annum. We then ascended the mountains of Shama Dash, from which I could see the plain and village called Vizier Chumman (Meadow of the Minister), which I had visited on a former journey, and returned thence along the top of the mountains by a very difficult road to Menjile, both tired and disappointed by our journey. Halting one day to refresh our cattle, we descended the ravine of the Kizil Ouzan, which now takes the name of Suffied Rood; at a mile and a half farther we crossed the bridge before mentioned of 500 feet in length and built on seven arches. Notwithstanding the width of the river, the stream sometimes breaks over the bridge in the spring of the year. We entered immediately into the strong defile of Rood Bar; the road is exceedingly stony and rocky, but does not present the same terrific appearance as the pass of the Caucasus, or that of Kara Daug (Black Mountain), and might

be rendered very practicable for artillery and carriages. At three miles and a half we came to a recess of the mountains, here thickly planted with olive trees, with some villages visible on the other side high up the mountains; at a mile and a half farther we crossed a small stream called the Zeazut Chie, with a village of the same name, entirely hidden by the olive plantations; and half a mile below we came to the small town of Rood Bar, where the river is fordable except during the spring months. The town may contain 500 houses, and though there is little cultivation, except in their gardens, it carries on a considerable trade in oil, olives, and soap, all of which are exported to Russia. Our route lay in the same valley, presenting strong points of defence, and thickly wooded with olives. At the tenth mile we reached the caravansera of Rhustom Obad, situated on a height, and admirably calculated for the defence of this defile. The road now lies through a narrow valley, highly cultivated, but indicating a near approach to the Caspian. The olive begins to become rare, and a thick forest covers the sides of the mountain. The people lose the fresh colour of the upper land, and look sallow and less athletic. After a journey of eleven miles and a half through a wide but thickly-wooded valley, we reached Imaum Zada Hashim, the tomb of a favourite saint of the Sheahs, having, on the other side of the river, the lofty mountain of Dufeh Daug. Nothing can form a stronger contrast to the high parched plains of Persia than the province of Ghilan, covered with wood, damp, swampy, and unhealthy. The people no longer live in large villages, but are dispersed, in small parties of four to ten houses, through the forest, and always at some distance from the road. Their features more resemble Indians, and the cattle are small, having also the hump peculiar to that country. Though an attempt has been made to render the road more practicable, it is still exceedingly bad, and with the greatest difficulty are goods conveyed from the principal mercantile town in Persia to the interior. Rice being the only grain grown in the plains of Ghilan, the fields are constantly under water. The road is cut through for the purpose of irrigation, and the soil being either vegetable mould or clay, the mules fell with their loads, rendering our journey very disagreeable. The plantations of mulberry trees are so extensive, that they are with difficulty distinguished from the swampy forests, through which, I think, no persons but those acquainted with them from long practice could find their way. We were often obliged, in the distance of twenty-two miles (from Imaum Zada Hashim to Resht), to change our guides, the person seldom knowing more than the country immediately round his own dwelling. Resht, the capital of Ghilan, contains 50,000 inhabitants, and is by far the most flourishing place I have seen in Persia: the houses are of a very superior construction, and the

streets generally well paved. The natural difficulties of the country have saved it from being plundered during the civil wars which devastated for so many years the other provinces. The government has always been much in the hands of its own elders, who being usually the most wealthy and respectable people unconnected with the great military tribes, their influence depended solely on the good will of the people. The fear of their calling in foreign aid has always rendered the Persian government averse to pushing them to extremities. There exists in Ghilan a wealthy class of landed proprietors; and the people are well lodged, clothed and fed. Properly speaking, there are no villages in this province; the peasants reside either in single dwellings or small communities, seldom exceeding eight houses; there are bazars established in central situations, with fixed market days; the people have no fear of leaving their goods during the intervening time; and perhaps a blacksmith, baker and carpenter may constantly reside there. The only other towns are Enzilli (the port of Resht), containing 2500 inhabitants; Fomen, 1200; Mosulla, 2000, and Lahigan, 7000. The climate of this province is so unhealthy as to have given rise to the saying, 'Whoever is tired of his life, let him go to Ghilan;' and Resht is the worst, even the inhabitants bearing signs of its malignity. Fevers, dropsies, and enlargement of the spleen, are the most common disorders; and cutaneous eruptions are so common as not to be here considered disease. The quantity of rain that falls in Ghilan far exceeds that of any other of the Caspian provinces; this appears to be occasioned by the prevalence of north-east winds blowing directly into this bend of the Caspian, here backed by very high mountains, which arrest the clouds, and occasion their descending in torrents of rain in a very confined space. To such a degree does this wind prevail, that all the trees on the mountain are bent in a contrary direction. Cotton will not grow, and the fruits have an acid and harsh taste. Sugar canes and orange trees, which abound in Mazanderan, are here only cultivated as ornamental plants. A most singular phenomenon is said (for I did not witness it myself) to exist during the winter season. A hot southerly wind sometimes springs up, which instantly changes the temperature in a remarkable manner, and immediately dries wood and other inflammable substances to such a degree as to render them liable to take fire from the slightest spark. The police are sent round to caution the people to extinguish their fires, as many serious accidents have taken place. This generally lasts twenty-four hours, and is immediately followed by a gale from the north-east, bringing snow and rain. As the mountains and high places of Persia are at that season covered with snow, this wind cannot derive its heat from coming over them, nor are there any satisfactory means of ac-

counting for it. I did not at first give credit to the story; however, on inquiring from many people of all ranks, as well in the towns as in the surrounding hamlets, I invariably received the same account.

From Resht I proceeded to the mouth of the Suffied Rood—unhealthy in the extreme, and difficult, from the rice cultivation and the thick plantations of mulberry trees. I had been obliged to leave my own horses, and to hire those of the country, which alone at this season can make their way through the deep mud. After twenty-one miles of a most disagreeable and fatiguing march, we came to the district of Lashtenasha, where there was an extensive bazar, much frequented. From this to the mouth of the Suffied Rood is thirty-six miles, through the same kind of country, over a road as bad as could well be traversed. The river is here of great breadth, and considerable depth within the bar, on which there are at times seven feet water, but frequently not more than three. At the mouth of this river a great sturgeon fishery has been established, and is at present rented and conducted by the merchants of Ashterkhan, one of whom told me that nearly 200 tons of caviar had been cured in one month, and sent to Russia. Ffteen miles from the sea, the Suffied Rood (White River) divides into two branches, forming, like the Araxes, an extensive island or delta. From the southern branch, another stream or canal again separates itself, and running parallel with the coast through several small lagoons, reaches Langerood. This was formerly navigable for boats, but is now obstructed by numerous shallows, and is seldom, if ever, used. I cannot pretend to judge correctly of the distance, as our journey was frequently interrupted by the swamps, and we made numerous detours in the forest to avoid difficult places. We returned along the banks of the river by a road much more practicable than the former one, being generally over the gravel bed of the stream, which at this season occupied but a small portion of it, and flows at the rate of a mile and a half an hour; it has frequently a depth of twenty-four feet, but the navigation is much impeded by shifting sands and fallen trees. We halted at the village of Resht Abad, close to the river on the right bank. This is the great road leading from Mazanderan to Resht; some parts of the causeway made by Shah Abbas are still in existence, and would have been in good preservation had common care been taken to protect it from the inundations of the mountain torrents, which, from the accumulation of fallen trees, have frequently changed their course and cut deep channels through it. Where such accidents have not occurred, the road is still good, and appears to have been carried through the swamps upon a bed of charcoal of several feet thick, on which rests a layer of earth and the pavement. In this part it is seldom used, from the frequent

detours to avoid the obstacles before-mentioned; and after a journey of ten miles over a detestable road, we reached Lahijan, a clean and beautiful little town; as it stands much higher than Resht, it is more healthy, and, as a residence, is far preferable. The great proprietor here was Ali Akber Beg, whose house more resembled a palace than the residence of a Persian merchant. From a hill close to the town, the coast of the Caspian can be traced in all its windings for a considerable distance on both sides. We returned to Resht by the direct road, a distance of twenty-five miles, which took us thirteen hours to perform.

The alarming state of the health of the party now obliged me to think of getting out of Ghilan as fast as possible, one of the servants having already died of fever, and most of the others showing symptoms of an attack. For this reason, on the 18th of October, we took the shortest road by Fomen, distant sixteen miles, the country presenting the same rice swamps or forests. This miserable town presents nothing remarkable except the palace of Hadje Jemal, who murdered Elton in 1746. The place was nearly ruined by Aga Mahomed Khan in the civil wars. We were only able to make eight miles on the following day to Zedic, which took us six hours. From this commences the ascent of the mountains by the pass of Mosulla, twenty miles of a difficult rugged defile, infinitely stronger than that of Rood Bar; however, having now got clear of the swamps, we found the mountains comparatively easy, and passed several iron forges, the produce of which is however very trifling. The town contains 500 houses, built on the steep sides of the mountains, down which stones occasionally fall, sweeping away all the buildings in their course. I took the angle of ascent of the highest peak above the town, and found it 34°; by boiling water the elevation was 3500 feet above the Caspian. The ascent was winding, and exceedingly steep. At the sixth mile we stood on the summit of the mountains, here 7000 feet high, and nothing could present a stronger contrast than the appearance of the country on the east and west sides of them. The side towards Ghilan was thickly wooded, and covered with a dense fog, whilst the sun shone brightly on the other, where the country had a dry and even burnt appearance, without a vestige of wood. Our descent was much less rapid, and not difficult, to the village of Badjillan, situated in a forest of apple-trees, for which it is celebrated; water boiled at 202°, giving an elevation of 5300 feet; but here the orchards, and even grain, required irrigation. On the following day, by a gradual descent over a good road, at the fourth mile, we came to the Sha Rood, which we had passed at its junction with the Kizil Ouzan in a former part of our journey, near Berendeh. We now ascended the stream, which flows through a valley most beautifully laid out

in gardens, frequently passing large and flourishing villages. We halted at Derou, situated on a high bank over the river. We still ascended the river as before, for fourteen miles, when it flows nearly at right angles with its former course; and passing a low range of hills at the distance of eight miles, we entered Herou, a considerable town, capital of upper Khulkhal. On the following day we continued our route over an uneven, but highly cultivated country, to Ahmed Eyca, a poor village on the Midan Daug (literally 'easy ascent'). At the twenty-second mile we reached the pretty little town of Terk, surrounded by orchards belonging to the Shekakies. From this it is nineteen miles to Turkeman Chic, a village on the high road from Tehran to Tabreez. The latter part of this road has been so often gone over by other travellers, that I will return to Resht; from whence, at a subsequent period, I travelled along the shores of the Caspian. I will offer no apology for thus blending two journeys, as my object is solely to describe those places which I consider least known, and to avoid what has been often and minutely described by other travellers. From Resht we dispatched our horses by a route leading round the south side of the great back-water, as they could not be embarked, and even unloaded would have great difficulty to make their way by the swamps and ditches which everywhere embarrass the traveller in this difficult country. The people of Peer-i-Bazar have always been able to prevent the repair of the road to Resht, as they thus become possessed of the monopoly of the transport of goods from that place at a most exorbitant price, and even when the country is dry in the heats of summer, they frequently inundate it artificially to make it more difficult. *Their* cattle alone are able to make their way through the mud and tangled roots of trees through which the road lies. The distance is only four miles, but we were the same number of hours performing the journey; and had I not been *obliged* to pass it, I should have had no hesitation in reporting the route impracticable. The whole road consists of deep holes, into which the horses sink to the knees, and by constant habit draw out one leg after another to replace them in others of the same kind. I attempted to walk, but was soon obliged to remount my horse, having lost my boots. The Russians once attempted to advance by this road, but were easily repulsed by the militia of Ghilan, and this is the reason given for keeping it in its present state. There are two small rivers passing through the city, which might easily be rendered navigable for boats, and in no way injure the defence.

From Peer-i-Bazar we embarked, in a fine boat, drawing three feet water, but experienced great difficulty and delay in getting past some fallen trees, one of which we were obliged to cut in two. After a mile, we reached the great lake, or back-water, and with

difficulty followed a track through the reeds for a mile and a half farther. It blew rather hard, and our crew, with the exception of two Tartars, were the most timid sailors to be met with; they wished to come to anchor, but were forced to pass on, and in two hours reached Enzilli, a distance of fourteen miles. This being an important point, we halted here for some days, to make observations, as well as to rest our horses, who joined us on the third day, much fatigued and strained by their journey. The town of Enzilli, built on the low spit of land which separates the lake from the Caspian, is a miserable collection of wood and reed houses, with three brick caravanseras. Some low detached towers compose its only defence. When we arrived there were thirty vessels in the port, of from 50 to 70 tons, principally belonging to Bakoo, and three Russian brigs from Ashterkhan, which could not enter the back-water, the channel from which is 500 yards wide, but the bar has seldom (except after N.E. winds) more than four feet water, though the depth is much greater a short distance within. Were the channel confined on each side, which could, from the abundance of timber, be easily accomplished, I have no doubt that a deep passage would very soon be formed by the current, which always runs out.

Perhaps no question has been so much agitated, or at present remains in such doubt, as the actual level of the Caspian, and the variation which it has been supposed to be subject to. I will here state what information I have been able to collect on the subject. Not having then met with the observations of Engleheart, I had no idea that the Caspian was really lower than the ocean; and on finding water boiled at three-quarters of a degree of Fahrenheit higher ($212\frac{3}{4}$), I concluded that either some accident had happened to the thermometer, or the water contained impurities, which might occasion it. Fortunately, having four excellent thermometers, one of which had been constructed at the Observatory of Paris, I procured a quantity of distilled water, and repeated the experiment in vessels made expressly for the occasion; the result was invariably the same, which would give a difference (if the same law hold good above and below the boiling point) of 390 feet below the ocean. Considering this as impossible, I took no further notice of the experiments till I saw the measurements of Engleheart, stated at 54 toises, French measure, ascertained by a long series of barometrical observations. I will not say whether this question has been finally decided or not, my observations were purely accidental, having no idea that a difference to that extent existed. Another question has been almost equally discussed, viz.—To what variations the Caspian itself is subject? The people of Enzillon say that it rises and falls several feet in periods of nearly thirty years, independent of the accidental and temporary rise and fall of four

feet, occasioned by the long prevalence of winds from any particular quarter. This I have often witnessed; but the greatest variation was three and a half feet, during which three distinct and very high surfs broke along the western coast; the first at a mile from the shore.

Several authors have treated on the rise and fall at different periods. Hanway, in the papers he has written on that subject, mentions that, in 1746, the sea was much higher than when the expedition under Peter the Great sailed, in 1722, at which time there were only six feet of water in the channel of the Volga, but in Hanway's, twelve. In 1784, Forster remarked that the water had risen to such a height as to bring down the sea wall of Bakoo; whereas the sea was, in 1828, distant from the nearest buildings of the city of Bakoo at least a quarter of a mile. The mouths of the Volga can, however, never be taken as a fair criterion, as that river must always be the principal agent in forming the depths of the channel, as also being itself subject to great rises. My experience extending only from the year 1811 to 1828, I cannot pretend to decide this point, except that, during that period, the Caspian, as well as *every other lake in Persia*, decreased most sensibly in depth. In the lake, or back-water, of Enzilli three new islands (besides the original one, called Mian Pushta) have made their appearance, and are now covered with reeds and grass, where cattle pasture,—even a few willow bushes are springing up. The backwater of Gemishawan, near Lankeran, is now fordable, which it was not in 1812; and, as I before observed, having no defences on the sea side, was nearly taken by the Persians in the year 1826, the town *now standing a quarter of a mile from the water.*

From Enzilli we marched along the narrow slip of sand which separates the back-water from the Caspian. It has been driven by the wind into irregular shapes, but is generally covered with a kind of coarse grass, and vast quantities of wild pomegranates, the skins or shells of which form a great article of trade with Russia. At the thirteenth mile we halted at a few houses, called Kopper Chall, the western boundary of the back-water, and where they say it formerly communicated with the sea; but being shallow here, the other opening was made at Enzilli, when this one closed up of itself. The remains of the former opening are still visible, and a canal could at present be constructed in a few hours. We continued our route along the shores of the Caspian, which presented the same bank of sandy soil, about 100 yards wide, covered with pomegranate trees,—at this season loaded with fruit. Immediately on our left, the country was a thick, swampy forest, with numerous lagoons, in which were many decoys for ducks; but the road was excellent, except when we were obliged to ford

the numerous mountain-streams. At the fourth mile we passed the Malarood, where a considerable fishery for salmon was established. This fish is found in great abundance in all the clear mountain-streams, but never in those proceeding from or through the swamps. They seldom ever mount the Kizil Ouzan, which is more muddy than either the Kur, Terek, or Volga. We forded the river, with considerable difficulty, at its mouth, which had only four feet water, though it is twenty feet deep immediately within. At the sixth mile we passed the Shief Rood in a boat; the river was much the same size as the former. At three and a half miles forded the Noucandau, beyond which a number of small lakes run parallel to the coast; the water of these, which appears to filter through the sand into the Caspian, was drunk by our horses, and was scarcely brackish. At the ninth mile we were ferried across the Ali Kam, the largest river we had yet crossed, in which were three boats from Bakoo. At the fifteenth we arrived at the Dana Chall, which forms the boundary of Ghilan and Asalim of Talish. This stream is navigable for three miles up, and has always four feet water on the bar. We immediately turned into the forest, and halted at a fine village called Kulleserai. The last mile was very difficult, and our horses took an hour to perform it. On the following day we descended the Kulleserai river, which was only fordable at its mouth, and continued, as before, along the same bank of sand, here covered with grass, to the mouth of the Narraran; and from thence to the Hindakan, where we turned into the forest through a very swampy, muddy road, to Minarabine, where we halted. This was a collection of four comfortable farm-houses, that would not have disgraced any part of Europe. From this it is eight miles to the Kirganarood river, the largest we had crossed since leaving Resht. Many boats were on the river, principally from Bakoo, or Baud-Koo. The district is very fertile, and a very practicable road, kept in good repair, leads up the river to Ardebile. The silk produced in Talish is of a very inferior quality to that of Ghilan; the people are more warlike and less industrious, and under little control. We were, however, hospitably and kindly treated, and had no difficulty in procuring what was necessary. Being in the constant habit of bathing in the Caspian, I found along the whole of the coast that, for 100 yards, the sea was not more than three feet deep, which increased, like a step, to six, and at a short distance to ten, the intermediate space being perfectly level, and the sand hard. Small fisheries are established on most of the rivers, and a considerable quantity of salmon is taken. I only saw two other kinds of fish, the bream (called seam, or silver) and a kind of carp, both of a very inferior quality. They never fish in the open sea, nor have nets fit for the purpose.

The herrings, though taken in considerable quantity in the Terek and Aras, are never found to the south of the last-mentioned river.

We continued our route along the sea-shore; the weather was perfectly calm, and not a ripple was visible on the Caspian. We passed several small streams at their mouths, and observed a prodigious number of fresh-water springs at, or below, the level of the Caspian, the water of which had hardly the least brackish taste. At the ninth mile we turned into the forest to visit the old castle of Lissar. The forest was thick, as usual, but the ground hard and dry. We passed some very fine trees, covered with wild vines and hops, which frequently extended over three and four trees, but the grapes, now ripe, were small, and of a very bad quality. Almost every kind of fruit grew wild in abundance; and this is perhaps the country from which the greater part were originally brought. The Castle of Lissar is situated on a low hill, two and a half miles from the Caspian, the whole summit of which it occupies; the walls are well and solidly built, and appear anterior to the Mahommedan conquest. A covered reservoir is in good preservation, the water of which is probably supplied by springs in the mountain, as it is always at the same height, whatever quantity may be taken out; the direction of the pipes, if they exist, is not known, and great care appears to have been taken to conceal them. There are no inscriptions, nor in fact anything remarkable about the building, which is still in very good repair. We halted at a few farms, called Numandan, on the Lissar river, an inconsiderable stream. During the night the rain fell in torrents, with a strong wind from the N.W. Towards morning the rain ceased, but the wind continued as before. We crossed the river by a wooden bridge, and soon reached the shores of the Caspian, where three very high surfs were running with great violence. At the eighth mile we came to the small stream called Khutwasera, which, on a former journey, I had passed without observing; it now was a rapid, foaming torrent, bringing down stumps of trees and large stones. We were detained for three hours before we could get across, and immediately came to a headland, which here approaches the sea. When I last passed there was a space of at least fifty yards between the water and rocks, but at the present time the water broke occasionally among the bushes at their foot. As the distance around the point did not exceed thirty yards, and in the intervals between the waves a dry road existed, we were in hopes of pushing our cattle past; on trying this, the leading horse unfortunately turned, when mid way, and the others stood fast—in an instant we were taken by the waves, and the cattle were swimming in the sea. Fortunately we escaped without further accident than the loss of a mule and its load, and being ourselves perfectly

drenched. We found a small farm, where we remained till the following day, when the wind having fallen, we crossed, though still with some difficulty, and at the fourteenth mile reached the Khevey river, which admits of boats of fifty tons. This is a large village, and before the building of Lankeran, the principal fort in Talish; it still possesses a good bazar, but the trade has nearly ceased. From this there is nothing remarkable to Astara, a small modern fortress, on a river of the same name, which for many years has been occupied by the Russians. The country has been cleared to a considerable extent, and much rice and cotton are cultivated. The Talish mountains are here lower than in the other parts of the range by 800 feet, consequently the ravine of the Astara river has been selected by caravans for the general line of communication, Lankeran, since its conquest by Russia, having become a considerable trading town. I found the difficulties of this road even greater than those of Rood Bar, the only object in choosing it being that it is something shorter, and the snow in the winter is not so deep as on the tops of the mountains; otherwise it is exceedingly steep, stony, and dangerous. This stream now forms the boundary between the Russian and Persian territories. At the fourth mile we passed the bridge called Pool Dullak (the Barber's Bridge), from having been built by a person of that profession. A Kadjar Khan affected to consider it below his dignity to pass it, and attempted to ford the river; his horse was carried down by the stream, and he narrowly escaped with his life. At the sixteenth mile of a continued and strong defile we came to the celebrated, though now abandoned fortress of Shindan, which, standing on the summit of a bare, isolated, and rugged rock, nearly 7000 feet in height, forms the leading feature of the range. On the western side alone it is accessible, where it is joined to the main range by a ridge which ends abruptly at this strong point. The lower part was formerly surrounded by a strong wall, with towers at very short intervals, which have crumbled down. The ascent is then by a steep rocky path to another level spot, which was also enclosed by a wall of stone; and within the ruins of a number of buildings some parts of the vaults still remain. A more rugged ascent leads to a flat stone platform, which is the highest part of the castle, with a cistern, and a single oblong building, the use of which it is impossible now to ascertain. From this height the Caspian actually appears at your feet, even the white foam on the beach can be descried. A mountain, which I can only suppose to be Demavund, bore S. 31° E.; Ardabile, S. 57° W.; Sevellan mountains, S. 85° W. The only means I had of ascertaining the elevation was by boiling water, which was 200°. We remained to take bearings until near sunset, in hopes of getting a more distinct view of the mountain we sup-

posed to be Demavund, which the distance seemed to render impossible; however, no mountain of the form or elevation, except that, exists in the Elbors range. Four miles from this we took up our quarters at the village of Khan Aga, and on the following day went to Ardabile, sixteen miles, over a fine green plain. I could not help remarking the perfect level of some part of this plain, bounded by a kind of bank of washed sand; and here no doubt was once a lake, which at last found an outlet by the bed of the present Kara Soo. The town of Ardabile, and tomb of Sheik Seffee, the founder of the Shea religion, has been too often described for me to mention them at present. The fine library was sent to Russia when the place surrendered to Count Soukhtaline, and the tomb has been much damaged, at least in outward appearance, by earthquakes.

The story of the frozen prophet on the mountain of Sevillan, mentioned by Mr. Morier, in his second journey, having attracted the attention of the English gentlemen when at Ardebile, in the year 1827, a party of them set out on an expedition to ascend the mountain. The following account of it was kindly furnished me by Captain Shee, of the Madras Infantry:—

'After a ride of eighteen miles, we reached a camp of Illiauts, and had not been long seated before we perceived a party descending, which proved to be the Mulla Bashi of Tehran and Ali Khan, who had been sent by order of the king. They told us it was not worth our while to ascend, as there was nothing to see, and the difficulties were very great. From their fresh appearance we much doubted their having reached the summit, and determined on the following day at least to endeavour to accomplish our object. Two hours before daylight we mounted our horses, with two guides, and rode for six miles, when we were obliged to leave them, and proceed on foot. The mountain did not appear very difficult, but we soon found our mistake. After surmounting four distinct ranges, every one of which led us on, in hopes of being the last, we reached the summit by the E S. E. side at 11 A. M., having been walking five hours, our guide, an old man of seventy years of age, being the first. On the top of the mountain, we found a tomb, consisting of stones neatly put together, and covered, except at one end, where a few stones had been removed to look at the body. In it we found the skeleton of a man lying with his head and body inclining to the right side (turning towards Mecca); the front half of the skull, the left collar bone, the left arm, from the shoulder to the elbow, with four ribs on the left side, were alone visible: some dried flesh and pieces of the winding-sheet were still adhering to the skeleton. The remainder of the body was buried in ice and earth. The skull was perfect, except some of the front teeth, which were lying

about the tomb; twenty teeth are still in their places perfectly even and beautifully white. There appears no doubt, that before the stones were removed the body was perfect, and that the remainder, which is buried in the ice, is still so. Having satisfied our curiosity, we proceeded to see an extraordinary stone, out of which (the Persians say) oil is distilled, and in a hole at the top a diamond is seen. After crossing about a mile of snow and ice on the summit of the mountain, we came to an amphitheatre of about 600 yards in circumference, containing a pond of the purest water; the sides were covered with snow, and long pendant icicles giving the whole a beautiful appearance. To the right of the pool, a little higher up, was a cleared spot, with a wall about three feet high, inclosing a stone of three feet in height by four in length, over which a quantity of oil appeared to have been poured; in its centre was a hole, which had the appearance of being used as a lamp, and in it a piece of lead, to hold a wick, which the Persians had called a diamond. Numbers of offerings were placed round it. Near it was another stone, with some rude letters cut on it. From the appearance of the place I concluded that, at some periods of the year, the Illiauts frequent this spot, and perform some religious ceremonies, making the stone the lamp. It took us three hours and a half to reach the place where we left our horses. We returned to the camp we had before left, perfectly persuaded that the Mulla Bashi had never ascended the mountain. Water boiled at 188° of Fahrenheit; the temperature in the tomb was exactly the freezing point.'

As the mountain of Sevellan is much higher than any in Azerdbijan, excepting Ararat, I have ventured to give the letter nearly as I received it. The height given by my friend will be very nearly 13,000 feet, which, though it is greater than mine, I think fully as likely to be the truth; the thermometer used was the same I had employed on the Caspian. This mountain appears to have been a volcano, and perhaps the latest in activity in this quarter. The rocks near the mountain are decidedly volcanic, and extensive beds of lava are to be seen on the north side. There are, however, no remains of a crater now visible, which has been fully proved by the ascent. There are four distinct peaks or pinnacles so closely resembling each other as easily to be mistaken at some distance, which frequently gave me great trouble in the survey during cloudy weather. All round the base are hot springs, but not of a higher temperature than 104°. Business detained me at Ardabile for some months, during which I minutely surveyed the country as far as Tabreez. It has often been described by travellers, and its nature will be sufficiently shown by the map. The Persian officers, who were to accompany me along the frontier, being at last arrived, we proceeded

along the range of Talish mountains, one branch of which makes a sharp turn to Kara Daug; the other, which we followed, is lost in the plain of Mojan, in the district of Burzund. The greater part of this road, from Ardabile, had been over a very rich country, but totally abandoned as pasture to the great tribe of Shah Sewund, who would allow none but themselves to cultivate the rich lands of Geurney, Alzer, and Burgund. Our party assembled on the 5th of March at a small ruined castle, called Kizil Kulla (the red fort), where four streams join and form the Balarood river, which, traversing the plain of Mojan, loses itself in the marsh near the Caspian, above Kizil Agateh. As the distance from this point to the Aras was forty miles, it was difficult to pass it in one day, and still more so to halt, from want of water and the number of snakes which infest the plain. We descended the before-mentioned river sixteen miles, to a remarkable round mound of tumuli, such as are very frequent in the plain of Mojan, but whether artificial or not is difficult to determine. The grass was already making its appearance, and the different kinds of crocus, &c. absolutely coloured the ground. The nights were still cold, and the snakes had but partially begun to leave their holes. However, in warm, sheltered situations, we saw them in considerable numbers. I saw two or three vipers of a small size; the others were the common checked snake, called in French *couleuvre*, which, though most feared by the Persians, are not venomous. On a former journey, during the month of June, the snakes literally covered the ground. We made arrangements to halt one night in the desert, which, with the exception of want of water, has none of the characters of those of Arabia. The soil is generally clay, covered with high weeds, though, in some places, of the richest vegetable mould, with frequent mixtures of the same kind of shells found at the Caspian, from which we were then sixty miles distant. We halted at the sixteenth mile, near a small hill, Koiler Tipha (mound of the well), of exactly the same appearance as the former, near which a well had once existed; it was now filled up, but we found some water in a small pool, which the cattle were able to make use of. Our general direction was north-west, but no roads or track existed. The Illiauts had abandoned the central parts of the plain, and were only to be met with in the bed of the river Aras. I fortunately had provided myself with forage, for we found no grass fit for horses. On the following day we reached the banks of the Aras, where grass abounded, and halted near the hill of Aga Mazar. Game was very plentiful, and we had no difficulty in killing more than we required. The bed of the Aras is here of considerable extent (three or four miles), of which the water occupies a very small part; the remainder is entirely filled up by tangled forests, through

which the river runs in many branches, but you may frequently march for miles along the bank without being able to approach the water. At the twelfth mile we passed the ford of Yedi Baluk (seven districts), the best on the Aras, passable at all seasons. At eleven miles farther we passed the ruins of a considerable city, called Altun Tukht (the Golden Thrones), which has every appearance of having a much greater antiquity than the name appears to warrant. The works are of the most solid construction, and the bricks much larger than are observed in modern buildings. The fortress is one mile and a half in circumference, but there appears to have been an outer town or suburb. A canal had formerly conducted the waters of the Aras to irrigate the surrounding country, but it has long since been dry, and this city was finally ruined by Nadir Shah. From this we ascended the left bank of the Aras, here divided by numerous islands for eighteen miles; having passed the dry beds of four canals, leading from the Aras, we then came to the hill of Aslandoose (the plain of the lions), and encamped at the foot of the mound of Timour, erected by him. The top had lately fallen in, and showed an immense hollow tube or well of masonry, round which the earth appears to have been heaped. The bones of the slain in 1812 were still scattered thickly over the ground. A mile and a half up the river Karra Soo, sometimes called the Derra Yourd, is still to be seen the mouth of the canal dug by the army of Timour, which he called after his father, Hadji Berlas. This canal extended through the whole of Mojan, and for the time in which it was constructed (one winter) may be considered one of the greatest works ever executed. It can still be distinctly traced for sixty miles, and is, in most places, ten feet deep and forty broad. At a very small expense, it could again be opened, and the desert of Mojan converted into one of the most fertile districts of Persia. The Karra Soo at this season is almost entirely taken away in the cultivation, but in the spring it is a very considerable river. Along its banks is one of the principal entrances into Persia. The ravine certainly presents many strong features, but still it will probably be, in any future war, the main line of communication of an invading army. We ascended the river, which, as before, is divided into many channels among wooded islands. At the sixth mile-stone we passed the ruined village of Inmaurut Melik (palace of the prince), where the hills approach the river, leaving only a narrow path; the country then opens to the village of Meralian, on the right bank. Eleven miles farther, through an open country of the finest soil, was another canal, also dug by the army of Timour when he wintered in Kara Baug, and rebuilt the city of Bellican, now called Biaut. This canal extended to the Kur, and was finished in forty days, being nearly fifty miles in length. From this it is

twenty miles to the bridge of Khuda Auferine (God Made), from a ridge of rocks, crossing the river, and on which the piers of the bridge have been built. This spot must be what is generally called the falls of Kresbar, or rather Aras Bar. This is the only place I have seen which can in any way be considered a cataract, though the fall does not exceed six feet, and is of very small extent. Half a mile above this is a much better built and more ancient bridge, constructed, like the former, on a ridge of rocks. My duty here ended. I crossed the Aras with the determination of visiting Tiflis.

Our route lay over an uneven but fertile country, much intersected by ravines, and at the sixteenth mile we halted at the large village of Dash Kussan, where we saw a decided change for the worse in the state of the peasantry, who, however, had only lately returned to their habitations, which had been entirely destroyed during the war. We passed through Ak Ouglan and a beautiful country as far as Askeran, where the river, coming from Shishe, loses itself among the reeds and marshes. This singularly built fortress appears to have been intended to shut up the entrance into the valley of Shishe, being built on the slopes of two opposite hills. From this we made an excursion to the ruins of Biaut, or Bellican, but saw nothing worthy of remark; it is evidently a modern place, and has been ruined about fifty years, the inhabitants abandoning it for the new city of Shishe, since become the capital of Kara Baug. Nothing could exceed the richness of the soil or luxuriance of vegetation, but it was totally waste from the constant incursions of the Persians during the late war. We continued our route over a country covered with what might be called forests of gardens, now growing wild; where a few miserable peasants were again rebuilding their ruined dwellings, and at the thirty-eighth mile we came to the town of Berda, on the Tartar river, situated near the ruins of an extensive fortress, the walls of which are still nearly perfect; distant fourteen miles from the river Kur, which must be much lower than the Aras. Water boiled at 211½°, and the productions, (pomegranates and figs,) growing wild, showed a warmer climate than the banks of the Aras. The plain was as level as the sea, with a belt of thick forest on the banks of the Kur, a deep and broad, but sluggish stream. Having been directed to these ruins as something remarkable, our disappointment was proportionate. The Arabic inscriptions showed a date of about five hundred years. We now directed our course to Ganja, where we arrived on the second day, a place rapidly going to decay, though there are still the remains of some fine buildings, and a magnificent avenue of plane-trees. The situation is considered very unhealthy, and the Russians have, in consequence, withdrawn

their garrison. Near this are two German *colonies, and the* population now consists principally of Armenians. This place could never represent the defile in which Cyrus was killed, the plain being twenty-four miles in breadth, and offering no strong pass, except towards Erivan. Sixteen miles from Ganja, towards Tiflis, we passed the ruins of an extensive city, called Shumkher, where still stands a minaret of beautiful workmanship, seventy feet in height. The walls appear to have been of a much earlier date, and in the old Persian authors it is described as the principal city in this quarter. There are here only Arabic or Armenian inscriptions. We halted at Zagun, twenty-four miles distant, an extensive and well cultivated district, almost entirely inhabited by Mahommedans of the Shumsadineloo tribe. On the following day we reached the banks of the Khram (so called from abounding in mullet), over which there is a fine bridge, and near it the ruins of one, said to have been built by the Romans. During the last three days we had a beautiful view of the Caucasus on our right, covered with perpetual snow; on the left the wooded mountains of Kara Baug and Georgia. From here it is twenty-four miles to Tiflis, which entirely occupies the strong defile of the Kur, and more resembles the place where Cyrus is reported to have met his death. Perhaps no town is making more rapid advances in prosperity and wealth than Tiflis since its occupation by the Russians, notwithstanding its confined and disadvantageous situation. It is too well known to need a description here. In 1829 it contained 27,000 inhabitants. I have often heard it asserted that more women than men were born in Asia. In Georgia I had an opportunity of ascertaining the contrary. There are 12,041 Armenian families in the kingdom of Georgia and surrounding dependent districts, of which very exact returns have been procured, and shewed 39,274 males, 34,027 females. A very considerable proportion of the Armenian men are always absent on business of trade, and frequently do not return for years, so the proportion is probably still greater. In Shirvan, there are 1688 families (Christians), 5337 males, 4143 females. I have many more returns of the same kind, which invariably give a similar result. Being sufficiently recovered from the effects of the Ghilan fever, we quitted Tiflis on the 3d of March, in hopes of accomplishing our journey to the Black Sea before the melting of the snow should have rendered the passage of the mountain torrents dangerous. The first day we halted at the ruined city Meschiti (thirteen miles), formerly the capital of Georgia, which has no building worthy of remark, except two fine churches, in which were buried all the sovereigns of Georgia. At this point the Kur and Aragua unite, as do also the roads

from the Black Sea and Russia; over the former is a bridge, said to have been *built by Pompey. We ascended* the left bank of the Kur, which runs at the foot of some very high mountains, leaving only space for a narrow and difficult road, though there are, occasionally, recesses, in which are situated villages, only inhabited since the Russians have possessed the country, it having always been particularly infested by the Lesgues. At the twentieth mile we passed the small plain of Howly, and at a distance of seven more forded the Kur, near the beautiful little town of Cori, with its romantic castle, built upon a rock overhanging the river. Nothing can exceed the beauty of the situation of this place. To the north a fine, well-inhabited plain extends to the foot of the Caucasus, whose summits present the most fantastic peaks, covered with perpetual snow. To the south runs the Kur; and beyond it are a range of mountains beautifully wooded, and some superb monasteries built in commanding situations. The rapid torrent of the Liafa adds considerably to the effect of the scenery.

This place is rapidly rising into importance, and a regiment of grenadiers quartered here effectually prevents the incursions of the mountaineers. Our route lay over the fine plain of Kartuel for twenty-eight miles, when we reached the tower of Souram at the entrance of the pass leading to the Phasis. The castle, situated on the frontiers of the Turkish province Akhaltsick and Immeretia, was of considerable importance; but both provinces being now under Russia, it at present only forms a picturesque object, and is rapidly falling to decay. We continued ascending the pass through a forest of dwarf oaks for six miles, when we reached the summit of a chain of mountains, which separate from Mount Caucasus, and whose ramifications extend through Persia and Asia Minor. Their height did not exceed at this point six thousand feet, the streams to the east falling into the Kur, those to the west into the Phasis. Our descent was much more rapid; at the sixth mile we reached the station of the Maletza, where there is a military post and some artillery. The snow had now begun to melt, and the road was detestable. The Russians, with great labour, have cut a pass along the brow of the mountain, and thrown many bridges over the ravines, besides clearing the wood on both sides, to prevent a surprise from the inhabitants, who, at one time, were very hostile. The Russian power has, however, now firmly taken root in this country, and travellers have nothing to fear (1825), which was far from being the case six years ago—(in 1819 I saw six dead bodies in the pass, and was myself repeatedly fired at). At the third mile we reached the bed of the Quirilloff, (a branch of the Rion or Phasis,) where an excellent road had been newly made along the banks of the river, and after five more we passed a Cossack station of the same name. The

valley was most beautiful, and gommey or millet was cultivated to a considerable extent. The valley gradually extends, and numerous villages are seen on the hills. Vines are extensively planted, and numerous herds of swine were feeding in the woods, which consist chiefly of beech and oak trees. At the twelfth mile we passed the town of Sharapan, said to be built upon the site of an ancient city; if so, there are no remains to indicate it. A few churches and a thin stone wall constitute its only buildings, except wooden huts and the Russian barracks. Immediately beyond this passes the main branch of the Quirilla, which comes from Mount Elborus, and perhaps contains more water than the Phasis, into which it falls. We were detained four hours on the banks before the raft on two canoes could act, and then crossed a range of hills containing one of those mud springs, so common on the north side of the Caucasus. From this it is twenty-six miles to Kautais, the capital of Immeretia, and head-quarters of a Russian division. The ruins of a once splendid cathedral, and the old Turkish castle, gave, when seen from a distance, an imposing appearance to the town of Kautais, which was entirely destroyed on entering it. The Russians have laid out broad and regular streets, but the houses are for the most part log huts, or wicker plastered with clay. The population has more than doubled in five years, and an extensive market is established, frequented by all the neighbouring mountaineers. The people are in the most abject state of slavery, miserably poor, and consequently idle and careless. The Rion or Phasis is here about thirty yards broad, but is not navigable, from rocks and other obstructions. On the piers of an ancient bridge, whose date is not known, the Russians have placed a wooden arch; but this is all that now remains of the thirty, said once to have crossed this celebrated river. I ascended the Rion some distance to look at the gold mines, but only found some shafts and furnaces, with some signs of copper; the ore of that metal is still found, but far inferior in richness to the mines of Georgia. If gold ever existed I think it must have been on the Quirilla, and not on the Rion. These two rivers join at the Georgian castle of Gwertsziche, twelve miles below Kautais, from which they take the name of Phas or Rion, and are then navigable for boats at all seasons; from this to the sea the river has no obstructions, is generally from twenty to thirty feet deep, and the current about two miles and a half an hour. The country appears perfectly level in many places—the banks are higher than the surrounding country. Their appearance would lead to the supposition that the river was formerly confined by embankments. In this province more rain falls than in any other part of the shores of the Black Sea; and the streams, having their sources in the high mountains of the Caucasus, are subject to periodical rises

on the melting of the snow, as well as sudden ones from the numerous mountain-torrents, which every where intersect the country, and render floods very frequent in its vicinity. It is nearly as unhealthy as Ghilan; but, being still worse governed, it can in no way compare with that province in produce or the industry of its inhabitants. As long as the feudal system exists with the present severity, little improvement can be hoped for. We proceeded from Kautais along the military road to Marinai, a considerable Cossack station on the Uskhini Itskali (Horse River), the largest of all the tributary branches of the Rion, and the boundary of Immeretia and Mingrelia. Three miles below this it falls into the Rion or Phasis, which is navigable from this point for boats of sixty tons, and might, except for the bar at its mouth, where there are only six feet of water, be so for the largest vessels. Twelve miles below the junction there is a considerable island, on which the Russians have a naval port, magazines, &c. We crossed the Rion at this point, and after a most fatiguing march of ten miles, reached Lanskoum, a well-peopled district in the states of the Prince of Gouriel. The road was nearly as bad as the worst in Ghilan, and we were six hours performing the journey. The difficulty of feeding our horses induced us to send them back to Kautais, and we embarked in a canoe and descended the Pitschori, which appears to me to have been an ancient canal. In ten hours we reached the Russian fishing station of Paristan, near a great lake, which, like that of Enzilli, communicates with the sea. We now entered the Rion or Phasis by a shallow channel, and descended the river for three hours, when we reached the Russian fort of Riauski Prista—a post at that time intended to watch the Turkish fortress of Poti (taken during the late war, and the Russians now possess the uninterrupted navigation of the Phasis). From this it is eight miles to Reduit Kalla, at that time the principal Russian station on this part of the Black Sea. The fortress stands at the mouth of the Kalla. This river is not more than thirty yards broad, but has twenty feet within, except on the bar, where the water varies with the floods, or more properly the wind, from four to seven feet. The bar is of sand, and of no great extent. The Kalla has eighteen feet of water for forty miles, and the current is scarcely perceptible; it consequently overflows the town and surrounding country, which is an absolute marsh during the greater part of the year. The climate is very unhealthy, and the Russians generally lose one-fifth of their men per annum. This is unfortunately the case to a still greater degree on the whole of the western coast, and Reduit Kalla will probably soon be altogether abandoned for the new position of Poti. The shores of the Black Sea are, like those of the Caspian, very shallow, and vessels drawing only ten feet of water

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must lie one mile and a half from the shore. A current runs from south to north; the surf is much less here than on the Caspian. The Black Sea has also the advantage of being perfectly free from sands and rocks. A moderate breeze generally blows off shore from ten in the morning until mid-day, but hard gales are almost invariably from the westward, when the sea rises four feet. The country is so perfectly low, that a fresh wind on the sea at the same time causes the rivers to overflow their banks. The anchorage is exceedingly exposed, but the ground is not bad. Some time before our arrival a Russian transport was driven on shore and totally wrecked (sixty lives lost). The Russians, by the late treaty, now possess the whole coast of Circassia, that is, as far as the Turkish cession can give it them. The Turks never had more than a few fortified stations for the purpose of procuring slaves, whom they exported into Turkey to the amount of several thousands annually, and to this trade, more than to any other cause, may be attributed the savage ferocity of the Caucasian nations. A very considerable portion of these were Russian subjects. As late as 1819 it was unsafe to walk far from the military station, and a Georgian lady was carried off by the Turks at Poti. Having made the necessary observations for ascertaining the longitude, latitude, and variation, I found the latter rather less than stated by the French navigators, but do not pretend to assume mine as being more correct than theirs; my observation both by the sun and a star gave from 4° 40′ to 5°; the weather was unfavourable, but I do not think this far from the truth. All people coming from Poti being subject to quarantine, I was not able to visit that station by land, but procured a boat, and proceeding down the Kalla found no obstacle from the surf. We then rowed down the coast, and at the seventh mile reached the north branch, which is shallow, and used only by small boats. The southern branch has always six, and sometimes ten feet water on the bar. The island, which is formed at the mouth of the Phasis, extends very little into the sea, and is of small extent. The celebrated temple at the mouth of the Phasis stood, I should think, on the spot now occupied by the castle of Poti, which has most probably been built out of its ruins. It stands on an elevated spot, and to construct it (had such a building not existed) the materials must have been brought from a distance. The signs of civilization have vanished more than in any country I have ever visited. Not a building exists on the banks of the Phasis, said at one time to have been covered with cities, bridges, and temples. Sixty miles to the north of the river the Russians possess a considerable station in the country of the Abbas; and near to that the cape of Iscuria and adjoining ruins clearly indicate the site of Dioscurias, so cele-

brated in the Roman history. There is, however, nothing here that would indicate that a city ever existed of sufficient importance to require the services of one hundred and fifty interpreters as described by Gibbon. All access to this part of the country is now impracticable, except by sea. Prince Gochakoff, who with a considerable military force, succeeded in marching by land along the shores of the Euxine, with great difficulty reached Sokhumkulla, and returned by sea.

These mountaineers will not, however, be able long to withstand the gradual advance of the Russians, both from the north and south. The death of every chief occasions a feud in the family, and they generally refer it to Russia, which is every day gaining ground along the whole extent of the mountains. Nothing but the conquests of Russia could have saved the Christian states of Georgia from utter destruction. Bravely as they for a long time defended themselves, they were gradually weakened. The mountaineers, supported by Turkey, daily became more bold and successful in their incursions, and when defeated were certain of support and protection from the Turkish pashas, by whom bands of kidnappers were maintained. The persons of the inhabitants were the sole object of plunder; the destruction of these miscreants at Akhaltsick, Akhiska, Poti, and Anapa, has for ever put down the trade. Considering that Russia has only possessed this country for twenty-five years, and that during almost a constant succession of wars, it is astonishing how much has been accomplished; and where a traveller complains of the bad roads and difficulty of travelling, let him read the description of Chardin, which would fully have answered to that of 1805. You may now travel in perfect security with *post-horses* from the mouths of the Phasis to the Kur and Caspian. My observations, made with boiling water, gave the Black Sea precisely the same level as the ocean (212° Fahrenheit).

On the 15th of April we embarked on the river Tzic, which enters the Kalla or Koppi, one mile from its mouth. This river, which has the appearance of a muddy ditch, traverses the great marsh, which extends nearly to the Phasis; we navigated this stream to within one mile and a half of the village of Khiladid, where carts drawn by bullocks took us the remainder of our journey. We now engaged a boat to ascend the Phasis as high as Merani. Heavy rains and an easterly wind rendered our progress very slow, being obliged to track up the river, and never able to use a sail After twelve miles we passed two considerable islands (probably the ancient preserve of pheasants); at twenty-six miles farther, the mouth of the Tekoui, coming from N. N. E.; and at fourteen miles beyond the Russian station of Kodori, four miles from which the Khenis Kari joins from S. 35 E. At eleven miles farther is another small island and at

nine miles farther still, the Pilchori joins from S. 75 W.—whence it is two miles to the military station of Merani, on the Itskhini Itskali, which is navigable for six miles to the old station of Merani. From this I returned by the same route, as before-mentioned, to Kautais and Tiflis, where we arrived on the 1st of May. The rivers were down, aud the route difficult and arduous. Severe indisposition detained me for two months. Before leaving Tiflis it is as well to mention all I have been able to observe myself, or to learn regarding the passages over the Caucasus, and those by the Black Sea and Caspian. Along the shores of the Black Sea no obstacle whatever exists to a road being made, and the only difficulty at present is caused by the numerous rivers which every where descend from the Abassian mountain. As along the Caspian, a hard bank of sand, of considerable extent, divides the swamps from the sea; but the rivers, without boats or bridges, are totally impassable. This passage was formerly defended by the strong fortress of Dioscurios and the present town of Anaklia, from which a chain of forts and the ruins of a wall extend towards the Caucasus. Though numerous paths lead over the Caucasus, yet they can only be traced by hunters, and even then with the aid of the people of the mountains. Up the Phasis a road exists by the Dirgar Circassians, but it is necessary to cross a plain, which, during nine months in the year, is covered with deep snow and ice, and it is not practicable for any large body of men. At Gori a valley leads up the Caucasus, through which the Russians propose making a road, but hitherto it has only been frequented by the mountaineers, and never in general use. At present men on foot can alone traverse it; but with the assistance of a few bridges over deep ravines, the chief obstacles will be removed. To the river Araga the appearance of the mountains is sufficient proof that no generally useful road can exist. On reaching that river, a fine broad valley leads to the defile at Anarore, which is not difficult. This outer valley of the Caucasus leads, by a gradual ascent, to the Mountain or, more properly, Pass, of the Cross, as the peaks on each side are two thousand feet high. The ascent by the new road, made by order of General Påskewitch, is easy for a carriage, as is also the descent into the ravine of the Terek. Three miles lie through a narrow ravine, bounded by high schist rocks. This pass is dangerous in the spring from the frequency of avalanches, which carry away the road. It has been cut with considerable skill and expense. There are, however, two other ravines leading into Georgia, but they are at present only used by the mountaineers. At the junction of these ravines is situated the post of Kodi. We were much struck during the last thirty miles with the density of the population in this cold and inhospitable region; not a vacant spot was to be seen, and villages were thickly scattered

over the mountains, all of which were fortified, or had a high tower in the middle, which served as a refuge in case of attack, or to watch the surrounding country. Rye, barley, and wheat, grow at the height of 7500 feet; the latter seldom comes to maturity; a few stunted bushes and vast quantities of the rhododendron were the only wood to be met with. Our route lay for eleven miles on the banks of the Terek, the road generally good and the valley well cultivated, till we arrived at Kasi Beg, a considerable village at the foot of the high mountain of that name. It contains twelve hundred inhabitants, principally Ossitinians, and near it is the celebrated monastery of Stephen Zeminda, built immediately over the valley of ice extending to Kasi Beg. The route now became more difficult and rugged, and the valley gradually narrowed, till it became, at the eighth mile, a mere chasm, through which the Terek appears to have forced its passage. To the right and left are stupendous rocks of schist, which frequently fall, and for a time dam up the course of the river; the accumulated water soon carries away the obstacle, and occasions an inundation in the valley below. At the entrance of this pass stand the post and old castle of Dariel, which I have no hesitation in deciding to be the site of the Pilæ Caspiæ. Here the features of the pass are strong and impregnable; the rocks approach so near as hardly to allow the foaming Terek a passage; and the mountains are scarped and impracticable, except by the narrow road leading directly under the walls of the castle, which are ancient and well built.

Both sides had been formerly occupied, and the fortifications are clearly intended to shut up the entrance of the valley. This spot is about 4000 feet above the level of the sea, and the highest ground over which we passed about 8000 (Mount of the Cross). Below this, the construction of the military road was a task worthy of a great nation, and the execution of it does credit to the officers by whom it was made. The forced and ill paid labour exacted from the mountaineers has been a great hardship upon them, and has occasioned much of the bad feeling of the Christian and heathen Ossitinians to the Russian government. If these abuses were corrected, it would do more to conciliate the country than any other measure. Below this, to Vladi Caucasus, though there are many strong points very difficult for a traveller, the mountains are accessible to the right and left, and would not have answered the purpose intended by the Caspian Gates. From the pass of Dariel the country is wooded and fertile, but these advantages are rendered of no avail by the constant wars of the Circassians. Miles may be traversed over the richest soil without seeing a vestige of human habitation; such, however, must invariably be the result where a Mohammedan population exists in the neighbourhood of a Christian state.

The only other pass between the Black Sea and the Caspian

is the celebrated one of Derbund, which has frequently been described. The upper castle of Derbund is built on an abrupt rock three miles from the shore, and the other is close to the water, (some people say the exterior ruins are visible even below the present level of the sea). These castles are connected by a double rampart, connecting, like the long walls of Athens, the citadel with the port. To what era the original works are to be attributed it is impossible now to decide, but I imagine anterior to Cyrus the Great. The foundations of these walls are composed of immense stones, and a jétty appears at one time to have extended into the sea.

It is practicable to turn this position, by a road, a few miles distant, through the mountains, and some remains of a wall are visible, which probably extended to a considerable distance in the Caucasus, here forming the most difficult mass of the whole range. The Caucasian nations were never more than nominally under the dominion of any one government, and it is only within a few years that Russia has fully occupied these important defiles. Besides them there are several mountain paths, which can only be traversed with the aid of the inhabitants, the most practicable leading from Upper Kakhetia, through the country of the Terek and Kisti, to the river Soundja and Kislar; the others by Balikau, through Kasi Komauk, along the Kai Son, to the same place. The followers of Alexander Mirza (the last prince of Georgia not a prisoner), who found an asylum in these mountains for three years, deemed them impracticable for horsemen, and difficult even for infantry; during eight months of the year they are absolutely impassable.

Taking leave of Georgia with great regret, we proceeded by the bridge over the Khram, which I had before crossed; we then turned into the valley of Akistafa, and at the fiftieth mile from Tiflis came to the village of Karavanserai, situated at the entrance of the strong defile through which the river forces its passage. We proceeded twelve miles up the finely wooded basaltic valley; it then opens into a rich and fertile country. At the sixteenth mile we halted at Dalligan, once a large village, but ruined in the late war: here we turned up a tributary stream of the Akistafra (the gun-road cut by Nadir Shah), through a glen thickly wooded and difficult. At the eighth mile we reached the top of the mountains, which are a branch of those we crossed at Souram, and on the shores of the Caspian. We now rapidly descended to the banks of the lake of Goukeka or Sevan, and encamped opposite to the island and monastery of the same name, having previously crossed a small stream called the Paluk Chic, from a fishery established at its mouth. The monks, after some hesitation, sent their rafts to take us to the island, distant 1200 yards from the shore. We lost soundings with 400 feet of line, soon

after pushing off, and the lake had the dark blue appearance of deep water. The island is three miles in circumference, inhabited only by the people attached to the monastery, considered the most ancient in Armenia. A small cell is shown, said to have been inhabited by one of the apostles; be that as it may, no situation could have been better chosen for religious retirement than this island, probably once wooded, and capable of producing support for a small number of inhabitants, having a lake abounding at all seasons with the finest fish. The part we crossed appears to be the deepest part of the lake (the north entrance), and many rocks, a little below the surface, run across the centre, and would probably obstruct the navigation. There are no boats on it, and until lately the shores were abandoned to the wandering tribes, who found abundant and excellent pasture. Having procured a guide from the convent, we set out on a journey round the lake; and returned along the brow of a precipice which overhangs it for three miles, but on which a road has been constructed by the Armenian patriarch practicable for carriages. At the fourth mile descended into the valley of Chubukloo. At the eighth, crossed the Paluk Soo stream, near its mouth. For twenty-two miles the road continued over a beautiful meadow, when we ascended the low range of rocky hills, called the Gun Bakhau (exposed to the sun). For some time we followed a narrow winding path which hung over the water, here shallow, and the bottom shelving rocks. After five miles of difficult travelling we turned away from the lake into the Phulat valley (steel valley), now covered with the tents of the Shumsadentoo tribe; and seven miles farther encamped at the ruined village of Tokliga, situated in a narrow ravine, which runs to the lake, distant three miles.

We again quitted the banks of the lake, and marched through some fine pasture land at the head of the Tersi river; and at the ninth mile we reached the summit of the Giller Danish, immediately behind the promontory of Ada Tippa, which runs a considerable way into the lake, and another headland on the opposite side reduces its breadth to six miles. A range of rocks is visible from the high ground, extending nearly across, and but little below the surface. The promontory of Ada Tippa, and the mountain, are partially wooded. There is a considerable extent of fine land on the banks. Seven miles farther we passed the ruins of Patriarch Bund—except the churches there are no remains of any consequence. Several of the tombstones were eight feet high, and covered with inscriptions in Armenian; some of them bore the date of the thirteenth century, and generally contained a brief account of the lives of those buried there. From the beauty of the country, excellence of the pastures, and coolness of the climate, this town had frequently been the residence of the

kings of Armenia, and the borders of the lake were formerly covered with sixty populous villages. The churches still exist, and attest the progress Armenia had once made in architecture. Three miles from this we came abreast of a small lake, situated at the south-western extremity of the great one, and communicating with it. Into this flows a considerable stream, called the Sogut Soo (or willow stream.) We ascended it for eight miles, to the pass of Yelliga (the winds), which divides Erivan from Kara Baug. The Tartar rises near this, in the mountains of the hot springs, but the ruins we were in search of proved to be of no consequence, and had no pretensions to having been the site of a Roman post. Following the range of mountains for six miles, we came in sight of a lake twelve miles in circumference, the banks of which are exceedingly abrupt and rocky; from this cause it is called the Black Water, and is situated at the foot of the lofty mountains of Dikcha Billekan (the top of the ladder). The Armenians consider this as the Tower of Babel, and point out the lake as the place from which the earth was dug to raise it. Our camp showed no bad specimen of the confusion of tongues, for among forty-four persons there were seven different languages—Turkish, Persian, Kurdish, Armenian, Georgian, Lesgue, and English. The climate was exceedingly cold, and it froze hard at night. Many of the party were here attacked by a malignant bilious fever, and there was great difficulty in removing the sick to the banks of the lake of Koukcha, where we were detained for ten days; two of the party died, and I was obliged to send to Erivan ten others, who did not recover for many months. I was less violently attacked, and as this was an occasion that might never again occur, I determined to continue the journey through this hitherto unexplored chain of mountains.

A small stream flows out of the Black Lake into the Sevan, but we found the ravine impracticable, and crossing a range of hills covered with pasture, but totally devoid of wood, entered the Gazell Derra (beautiful valley), and encamped at its mouth. The lake here is shallow, with a rocky but level bottom; the stream absolutely swarmed with fish, particularly trout, of which there are several distinct species, which are said to succeed each other all the year. One kind is frequently taken of sixteen to twenty pounds weight, and has every appearance of salmon. Besides these there are two kinds of mullet, and also carp and barbel. I never saw or heard of pike, perch, or eels; dace, gudgeons, and other small fish, abound.

Our party being at last able to move, we proceeded for seven miles along the banks of the lake to the river of Ada Yaman (bad name), by far the largest stream falling into the lake, near which once stood a considerable Armenian town. Convents and

churches were thickly scattered on the surrounding hills. Three miles from this, on the shores of the lake, is the camp occupied for two months by Nadir Shah. The intrenchments are still visible, and it appears to have been placed with regularity. Near it a small rock has been pierced to allow a stream to run through, but for what purpose it is impossible now to ascertain. We still followed the lake to the stream of Kabar, where a headland runs a considerable way out, opposite to the promontory of Ada Tippa, which reduces the breadth of the water to six miles. High perpendicular cliffs of lava here prevent the passage near the lake, and our horses suffered much from the steepness of the stones. We were struck with the vast quantity of obsidian scattered over the country. At Ak Kulla we again approached the lake, and found the shore covered with very light pumice stone, which floated on the water. We rounded a deep bay, and came to the spot where a branch of the Zengue flows out of the lake. That river derives but a small portion of its waters from this source, which is said to be artificial. *That*, however, I do not believe; at the same time, the ravine, having a very rapid fall, the quantity of water could be augmented at pleasure, and, if it served any purpose, a considerable part of the lake be thus drained.

We were now very near the island of Sevan, from which we had set out, having measured by perambulator or chain the whole distance. The greatest length is from Chubukloo, bearing S.E., to Sogut Soo (forty-seven miles); the breadth varies much: at Ak Kulla it is sixteen miles; at Ada Tippa, six; and the greatest, from Nadir Shah's camp to Patriarch Bund, twenty-one. The latitude of the island of Sevan is 40° 30′ 30″, but the lake extends to 40° 37′ 15″: the southern extremity is in 40° 9′ 40″. Water boiled on its banks at 202°, or 5300 feet above the level of the sea. It was partially frozen in the month of January, 1813. I cannot offer an opinion from whence the great and well-marked volcanic remains could originate, but it is evidently from no great distance. Where there is soil, it is light and of the richest quality. The Russian government have, I believe, the intention of removing 20,000 families of Cossacks to the banks of this lake, and the range of mountains on the frontiers of Georgia.

We descended the Zengue for thirteen miles, to its junction at the caravanserai of Soudagan with the principal branch coming from the Derra Khichick. The united streams form a considerable river, flowing for thirty-four miles through a basaltic valley to Erivan, and then through the level plain of Erivan, at twenty-four miles from which town it falls into the Aras.

We ascended the Derra Khichick, so called from the abundance and beauty of its flowers. The sides of the mountains are covered with forests, among which are visible numerous round churches.

For twenty miles the road was good and the soil excellent. We then passed some rich copper mines, now no longer worked. We next entered a narrow ravine, soon after crossed a high range of mountains, and descended into the plain of Abbaran; where at the fifteenth mile we halted at the old camp of Nadir Shah, which he occupied before the decisive battle of Arpa Chie. This plain, or valley, is between 5000 and 6000 feet above the level of the sea, and the lofty mountain of Ali Guz bounds it on the south. It is constantly covered with snow, and is little inferior in height to Sevellan. From this a long, fatiguing march of thirty-two miles brought us to the banks of the Arpa Chie, opposite the great monastery of Kockevang, having only passed one stream of water in our journey. The ground was covered with luxuriant grass. The whole of this tract appears to rest on a basaltic base, and the river flows through a deep ravine of the same. On one of the bends of this river stand the monastery and fortress, which are of considerable extent. The Beg of Magasbaerd, a Kurdish chief, came to escort us, on the following day, to the ruins of Ani, for many years the capital of Armenia. The limits of the present journal will not allow of my entering into a detailed description of this remarkable place. Three miles from the convent we came to the walls of the city, which were built of a soft red stone, in the best style of architecture; they are still perfect, except where the breaches were made by the Tartars, and the stones used in battering them are scattered about. The walls had a fresh and finished appearance, notwithstanding the battlements had in many places been destroyed by the machines of the Tartars, and the soft stone bore marks of the force with which arrows had been discharged at the loop holes. The city was defended on the side of the Arpa Chie by a perpendicular rock of basalt, and a deep ravine on the west equally protected it. On the north was a double wall (no ditch) of hewn stone, and to the south a fortified citadel or palace. Some of the churches were of the grandest description, and six still perfect. The largest was 100 feet in length and 60 broad, and appears to have been surrounded by extensive cloisters. On one I remarked an inscription in the Greek character, but imagine it must have been in some other language, as I have never been able to get it decyphered. (The Armenians at one time used the Greek character.) A branch of the ravine to the west is composed of very soft sand-stone. It has been excavated into numerous chambers, joined by a gallery, with windows hewn in the side; they extend for a quarter of a mile. At present it is impossible to determine to what use they may have been put, as the whole rock has, in like manner, been excavated, though in no other place to such an extent. There are several buildings which may have been theatres or public buildings; but the gene-

rality of the houses appear to have been constructed of rough stone, without any fixed plan. The statement of its population (400,000), as given by the Armenians, must be greatly exaggerated, it not being more than six miles in circumference, and having no remains of suburbs except the caves before-mentioned. I passed two days at this interesting place, and on the third we accompanied our Kurdish host to his castle of Magasbaerd, built on one of the commanding cliffs so frequent in this river. He was at that time in open revolt against the Pasha of Kars, but received us with kindness and hospitality.

Having, on a previous occasion, followed the course of the Arpa Chie, which invariably presents the same feature of flowing in the deep bed of a basaltic ravine, with numerous ruined castles placed on abrupt rocks, till near its junction with the Aras, at Hadje Byram Soo, I struck off to Taloon, where extensive ruins were said to exist. The distance was thirty-five miles of a stony, but otherwise good road, totally destitute of water. The Persians were at this time busily employed in constructing a fortress round a fine old castle, built in the best style of Armenian architecture. The walls are forty feet high, and entirely constructed of hewn stone. Considerable ruins, but of no importance, extend to the south, but we found no Roman or Greek inscriptions. On a high hill to the N.W. is a very ancient fortress, called the Goat's Rock; and two miles east of it, another ruined town, called Old Taloon, in which still remain three good churches. From this we proceeded to Hadje Byram Soo, determining to follow the course of the Aras, and ascertain, if possible, the position of Artaxata.

Immediately in front of the junction of the two rivers stands a castle, on a high rock, called the Kiskulla (Maiden Fortress), but differing in no respect from the numerous castles to be met with in Armenia; and about five miles to the westward the celebrated fortress of Koor Ougley, the residence of the Robin Hood of Armenia. Like the hill-forts of India, it could only be reduced by famine, and has more than once served as a retreat to the Kurdish chiefs of the neighbourhood. Its antiquity is probably far beyond the Christian era. Descending the Aras four miles, we passed the entrance of the valley in which are situated the salt-mines of Kulpia. They have for many ages supplied Georgia, and even the Caucasus, with that necessary article. The salt is so abundant, that the people have hitherto had no occasion to go to any depth. A range of hills, bordering the valley on the east side, is apparently entirely composed of that mineral, and in the sides of these, numerous excavations have been made. Under the Persians, these mines were farmed for 3000*l.* per annum, and a village of 100 families was employed exclusively in working them.

Three miles from this we reached Kara Kulla, near which are the ruins of a bridge. This is generally supposed to be the site of Armavera. On three sides, the perpendicular cliffs of a ravine, and the Aras, rendered walls unnecessary; the western side was defended by a strong and lofty wall of well-built masonry. The works enclose a space of two miles in circumference, but narrow, and containing only one large building on the western front, where the ravine joins the Aras.

I proceeded twenty-seven miles south of this, to examine a great lake in the mountains, which I believe has never been mentioned by any traveller. Our route, for twenty miles, lay in the valley of Eiramloo, gradually rising and well inhabited; we then began the ascent of the Mosian hills, which join to Ararat, and at the fourth mile we reached the summit. The lake appeared at our feet, but it was three miles before we reached it. The circumference is twenty-four miles, and the banks are destitute of wood. High rocks, in many places, prevented a near approach. This is the only water in Persia where I have seen the char, or yellow trout. At its western extremity a stream runs out, passing Byazeed and Makoo, and ultimately falling into the Aras. Not a human habitution was to be seen, and the country is only frequented by the Kurds during the summer. The elevation shown by boiling water was 6000 feet. We returned by the same route, and halted at the village of Arab Kerry, where there is a ford passable at all seasons of the year. We here crossed to the right bank, and examined some ruins on the remarkable hill called Tippa Dieb. They appear, at one time, to have occupied the whole summit of the hill, and on the highest point a solid building of hewn stone can still be traced; it is reported (and its appearance confirms it) to have been built before the introduction of Christianity. We followed the Aras to its junction with the Kara Soo, a very considerable river, rising near Itsmiasdin, from marshes and springs in the plain. The river is only fordable at one place, seven miles above this, and for some time runs parallel to the Aras, presenting an excellent position for a fortress. Three miles below the Zengue also enters the Aras, which now becomes a broad and deep river. We went to the monastery of Itsmiasdin, situated on the ruins of Valarsapat, a royal residence of the Armenian kings, in hopes of obtaining some information regarding Artaxata, Tovin, and other cities which formerly existed in this province. I sent one party to the mountain of Ali Guz; they reported having seen the ruins of a strong wall high up in the mountains, containing some churches and a confused heap of other buildings, but only with Armenian inscriptions. The fortress was two miles in circumference, and situated only a few hundred feet below the region of snow. They returned by Kerpey,

and joined me at the ruins of Guerney, a description of which may be found in Moses of Chorenæ. This city was destroyed by Timour, who, with great labour, pulled down the magnificent temple of Diana. The columns are beautiful specimens of the Corinthian order, and might soon be replaced. But both this and the seven churches have been described by Sir Robert Ker Porter and Mr. Morier. The valley of Guerney presents some of the finest specimens of basaltic columns I ever saw.

Descending the stream for twenty-six miles we came to the *Tukt Tiridate* (Throne of Tiridates), but it in no way answers to the site of Artaxata, being twenty miles from the river, and owing its strength solely to its fortifications. There now remain no signs of the columns seen by Chardin, nor does stone appear to have been employed in its construction. The walls must have been of great thickness, and the ditch broad and deep. We returned to the mouth of the Zengue, and followed the Aras for twenty-four miles, passing the celebrated monastery of Vedi, but without falling in with the least vestige of ruins. The river winds very much, and at least twenty positions, nearly surrounded by the river, presented themselves. We were now not far from the foot of Mount Ararat. I crossed the river, and had great difficulty in penetrating through the swamps, which extended for five miles; we then began the ascent, and passed great quantities of pumice stone. The ascent soon became rocky and difficult, and at the eighteenth mile we came to the ruins of Khram, a town frequently mentioned in Armenian history. We found nothing to repay our trouble; and on the following day returned to the place from which we had set out. We followed the river through the swamps and rice-fields of Sharoor for sixteen miles, when we reached a dry, barren plain, which continued for seven more, where the river runs through a cluster of low hills. Five miles below this we came to a remarkable bend in the river, at the bottom of which were the ruins of a bridge of Greek or Roman architecture. A high bank, perfectly level at the top, and the sides so regular as to have the appearance of being artificial (it is not so), extends the whole way. Thirty yards from the bridge there still remains a portion of stone wall, with a semicircular arched gate, and two rows of loop-holes; fragments of brick are scattered about, but no other signs of buildings. As a military position, it appeared to me inferior to numbers we had passed, and the space never could have contained even a moderately large city. I have at different times followed the course of the Aras from its entrance into Persia to its junction with the Kur, and can assert, that there are no traces, except these, at all answering to the description of Artaxata, in existence.

Below Abbas Abad, the river flows through a strong defile, and

nearly opposite to the monastery of St. Stephen are the ruins of an old Persian fortress (I believe Araxenæ); five miles farther, at the southern extremity of the defile, is the ancient city of Julfa. The hill fortress of Elanjak, blockaded for seven years by a part of Timour's army, is situated sixteen miles east of Nukshewan, on a stream of the same name. Forty miles below Julfa are the towns of Eglis and Ourdabad, but both distant from the river. The Aras then forces its way through a great chain of mountains. A road has been made which even now scarcely admits of a loaded mule passing on either bank. At the sixteenth mile we passed Megeri on the north, and Curdasht on the south side; the latter is a modern town, but ruined by the Lesgues about forty years ago. From that to the bridge of Khuda Auferine there is not a ruin of any consequence. The excellent memoir of M. St. Martin on Armenia gives an accurate description of most of the places seen by me.

I now quitted the Araxenæ plain, circumstances at this time appearing favourable for an excursion into the Kurdish districts in the neighbourhood of the lake of Wan. We ascended the banks of the Makoo river, one of whose sources, as before mentioned, comes from the lake near Kara Kulla. The plain was covered with beds of lava, three leagues of which could be distinctly traced. Decomposition is so trifling in Persia that the soil was scanty. The river in many places did not exceed ten feet in breadth, but was deep, and appeared to flow through a crack in the rock. At the twentieth mile we crossed it, over a natural bridge, formed by the lava, under which the river has forced a passage. Twelve miles beyond this, we halted at the village of Azim Kind, near which was a considerable space of land free from stones. The direction of the lava clearly shews it did not come from Ararat. On the following day we continued our route, and as we approached the hills the depth of the lava considerably increased. We reached, at the fifteenth mile, the village of Bilga, situated at the entrance of the valley of Makoo, where we crossed another bridge like the former. (The people say they are very numerous.) The valley is narrow, and the rocks on our right hand presented the singular appearance of a stratum of compact limestone resting on a bed of lava, raised by it to an angle of 45° on the west, and abrupt and shattered to the east. There were several circular recesses, like the craters of small volcanoes, and huge masses of limestone lay scattered about. At the seventeenth mile we reached the town of Makoo, and its gigantic cavern. The whole party were struck with amazement, and instinctively halted, not able to trust our eyes as to the reality of the scene before us. A vast arch, 600 feet high, 1200 feet in span, and 200 feet thick at the top, at once presented itself to our view. This

cavern is 800 feet deep, but, as the sun then shone directly in, the height and breadth alone attracted our attention. At the very bottom of this is a castle inhabited by a chief of the tribe of Biaut; and at the junction of the limestone and lava a number of small caves have been partially excavated, accessible only by a ladder. From one of these a small stream of water trickles down the rock, but the artificial works look, in the vast space of this natural excavation, like ants' nests on a wall. It appears to me that this could only have been formed at the time of some great convulsion of nature. From the breadth of the sheets of lava, I do not think they came from any volcano, but by the sudden rise of a great extent of country. Had a number of small volcanoes at any time existed, the meaning of Azerdbijan (country of fire), applied to the whole province, could not be doubtful. The chief was jealous of a close examination of his fortress, and though a ladder for which I applied, to examine an inscription at the western side, was promised, it never came. From the ground I could see that the writing was neither Arabic nor Armenian, and had some appearance of Greek or Roman characters. The palace is a modern structure, but the upper caves have always been in use as places of refuge. There are about 400 houses in the town; some few stand under the rock, but as masses of stone have frequently fallen, the generality are outside, and protected by a low wall; they could easily be destroyed from the top of the rock.

From Maboo we ascended the river. The mountains gradually became higher, and the valley narrower. At three miles there is a strong pass, beyond which the streams from Byazeed unite with another from Awajuk Chalderan, distant fourteen miles. (I have seen the plains of Chalderan, in some maps, laid down on the Aras; these are the only plains of Chalderan.) We then turned to the left, over a rugged, stony mountain road, for six miles, and at the tenth mile reached the convent of St. Thaddeus, one of the largest in Armenia. The climate is exceedingly cold, and the elevation 5400 feet; at night it froze hard, in the beginning of September. The convent had lately been plundered by a cousin of Abbas Mirza, who, much to his credit, had the young man brought to the place and severely bastinadoed, making *himself* full reparation to the monks. The next day's journey was over a rugged country to Zava (a distance of twenty-four miles), in the district of Sokhmanabad, the country abounding in pasture, but totally devoid of trees. We ascended the stream of Sokhmanabad, in the bed of which were some brushwood and willow trees. The ravine forms one of the passes into Turkey; the road was difficult but practicable for artillery. At the eighth mile we passed Malhamloo, a Kurdish village, situated in a recess of the pass. The road

for sixteen miles continues in the same ravine, when we entered the district of Mahmoodeah, forming the frontier between Persia and Turkey. This plain, four miles in breadth, is nearly 6000 feet above the level of the sea, and has a desert and bleak appearance, with the village of Miskar at the entrance of another ravine, descending gradually to Shumsadentoo, a considerable Kurdish district. To Kursat it is six miles: the road is along a fine valley, through which flows the river called Bund-y-mohey, from a fishery at its mouth in the lake of Wan, which it joins after traversing a plain of eight miles. On our right was the lofty mountain of Sepan Daug. We marched along the banks of the lake to Argish, a small fortress, five miles from which are some remarkable rocks, covered with arrow-headed inscriptions. This place is much frequented by pilgrims of all religions. The Mahomedans even consider them sacred, though they allow their date is anterior to the existence of their religion. I sent one of the party to Tidia Wan, by Akhlat, directing them to pass as near the lake as possible, and return by water to Wan; where I proceeded, but the pasha would not allow us to reside in the town, and we encamped at Sha Baug, once a palace of the kings of Persia. Having gained all the information I required, and procured an impression of some of the arrow-headed characters on the rock, I attempted to penetrate, by Wastan, into the Hukkaney country. We passed Semiramis river near the village of Artemick, and from thence proceeded to Wastan, the patrimony and birthplace of Mustapha Khan, chief of that great Kurdish tribe, the Hukkaney. Here we found the country was in too disturbed a state to allow of our proceeding. We returned by the same route, and halted at Ak Yokaush, or the White-pass, distant eight miles from Wan. The lake of Wan is said to be 240 miles in circumference, which, from the sketch I was able to make, is not far from the truth. The water is brackish, but cattle will drink it, particularly near the rivers. The only fish I saw were a small kind of sardinhas, which are salted and exported to all parts of Asia Minor. They are taken in vast quantities in the Bund-y-Mohey and Wastan rivers, and seldom exceed four inches in length. There are two considerable islands, on which have been built Armenian convents. Fourteen vessels are constantly employed in conveying goods from the different towns on its banks, and the lake is said to be of great depth.

I was much struck by the veneration paid by the inhabitants in this neighbourhood to the memory of the Assyrian kings, whose names they have preserved, notwithstanding the introduction of Christianity and Mahomedanism. A fine stream, near Wastan, is called Semiramis; the mountains near Bitlis, Hills of Nimrod; and those near Akklat, Ninus. In the north of Persia (I never

saw at any other place the arrow-headed characters, or heard the names of the kings of Babylon), not far from Talawan, they show some masses of lava, which they call the Tombs, or Petrifactions of Nimrod and his children. These places are frequented by Christians, Mahomedans, and Ghebers, with equal veneration, notwithstanding the injunctions of mullas and priests. The banks of the lake, particularly the eastern side, are very mountainous, and partially covered with wood; the soil is fertile, and the pasturage excellent. Eight rivers fall into the lake, but none of them are of great importance. Wan may contain 20,000 inhabitants. Wastan, Bitlis (eight miles distant), Tidiawan, Akhlat, Adaljewas, Ardish, are of much less importance.

I consider it probable that Xenophon may have ascended the Pass of Bitlis; the only objection to which was his not mentioning the lake. The direct road from that town to Moush and Trebizond lies on the other side of the mountains of Nimrod; he, consequently, would never see the lake. After passing Moush he was obliged to cross the high plains, now called Doman from the constant mist with which they are covered. Here he lost his way, from the desertion of the guide, and at last arrived on the banks of the Phasis (the Greek account). The district through which the Aras runs above Kagasman was, and is still, called the Phasin, or Pasin, and the river, by the inhabitants, the Pasin Chie, or river. He then again entered the high road from the north, both to Trebizond and the other cities in Asia Minor.

From Ak Yakoush we marched, by Alekek, twelve miles, leaving a lake of fresh water on our left; and halted at Mulla Hussain, an elevated but fine grass country,—total twenty-four miles. From this to Kasley Gul was twenty miles, where there is a lake of the same name, from which we descended to the ravine of Kotana, six miles, and halted at the town of that name. From this point I sent the baggage, and great part of our servants, direct to Khouy. We ascended the stream, coming from the south, which flows through a fine fertile valley for eight miles; the ascent then becomes exceedingly rapid; and at two miles farther we reached the highest part of the plain of Ali Baug, seldom free from snow, and boiling water gave an elevation of 7500 feet. This may be considered as the source of the Zab, a tributary of the Tigris. The stream up which we came joins the Aras; and another, rising near the same spot, empties itself into the lake of Rhumia. For five miles the country was swampy, with little grass, when we passed the Armenian village of Khanaga (the cold), and for the first time saw the singular mode the inhabitants have of preserving themselves from the attacks of robbers, to which they are constantly exposed. A large tower is constructed on the most elevated spot, round which the houses are built as close as practi-

cable, and the lanes or passages between them are covered over; all these lead to the foot of the tower, and on the approach of danger a number of riflemen mount, and occupy the gates leading into this covered labyrinth, where it is exceedingly difficult for a stranger to find his way, and thus mount the tower.

As we descended the fine valley of Ali Baug, here six miles in breadth, the country gradually improved; and at the eleventh mile from Khonia the castles of the Kurdish chiefs crowned every height. At the foot of these their followers had their cottages, and sentinels were constantly on the look out. Six miles farther brought us to the monastery of Derrie, then garrisoned by a party of the Russian battalion in the service of Persia. The Zab now contained a considerable quantity of water, and the country was well cultivated, and forms the most valuable part of the Hukkaney territory. Twelve miles from this, on the western side of the valley, stands the town and fine castle of Ali Baug, the summer residence of Mustapha Khan, but at this time occupied by the Persian troops. The chief himself was in another castle, Erza Atis, whither he invited me to proceed. I now found, from the many objections he stated as to the danger of the road, that he had no inclination to allow me to visit the country of the Chaldean Christians, who are in alliance and nominal dependence on him,—suspecting me of being charged with a message from the Persian government, whose troops at this time occupied part of his country, and had been attempting to bring over that people to their interests. He at last appeared to consent to give me an escort. That night our camp was attacked by a party of his men: we were fully on our guard, and they instantly retired. The Christians informed me there was a plan to cut us off in the pass leading to Julamerck; and the next day I had an officious offer of assistance. Being fully aware of the infamous character of the chief, I returned to the Persian camp. I accompanied a detachment as far as the frontier town of the Chaldeans; but finding that, if I proceeded, it would be impossible to return by the same route, but must come back by Amadia and Kermanshaw, six weeks' journey, I reluctantly gave up the expedition. Mr. Schultz, the celebrated German traveller, was subsequently murdered by Mustapha Khan, near this place.

I have frequently conversed with different chiefs and bishops of these people, and seen some of the districts inhabited by them. Mar Simeon, their khalifa, came shortly afterwards into Persia, where he was detained and died. This singular people, who have maintained their existence during all the great revolutions of Asia, consists of 40,000 families, divided into the tribes of Tearce, Tokhabee Bass, Diss, and Jeloo: they are the descendants of the Christians who fled from the persecution of Justinian, and at one

time inhabited the whole country from Rhumia to Bitlis; but the body of the people have now taken refuge in the impregnable fastnesses of the Jidda Daug, governed by a hereditary priest, descended from Mar Simeon, the bishop of Amadia, who led their emigration. He, as a priest, could not have a family, but the descendants of his brother's children, some of whom are always brought up as monks, have invariably succeeded. In their churches no images are allowed, nor pictures of saints; the fasts are neither so strict nor so numerous as those of the Armenian and Greek church; and, as far as I could observe, the people are simple, brave, and virtuous,—far superior in character to the other Christians in Asia. They are said to be remarkable for their want of intelligence,—to me they appeared stupid. Timour, after the capture of Wan, attempted to penetrate into their country, but desisted after great loss, and was equally unsuccessful in another attempt, made from the side of Amadia. The Turks have had no better success. They allow no Mahomedans to enter their country, and frequent markets where they carry on trade with the surrounding states. I never saw a country so cut by deep and difficult ravines, over which they have bridges composed of two trees joined together and slung at one end; guards are placed at every passage, and signal posts, to call the people together in case of danger. They possess mines of lead, copper, and iron, which they work with great skill. The sides of the rocks have been rendered productive by terrace walls, constructed with great labour. In many places the mountains are covered with trees; cedars grow to a great size, and the oaks produce gall-nuts,—arsenic is found in abundance. They consider the Syrian Christians of the Malabar coast as a branch of their nation, and hold occasional communication with them; besides these there are a considerable number scattered through Persia and Kurdistan, but all pay a small tribute to Mar Simeon, 1*s*. 6*d*. a family.

I did not approach near enough to ascertain the height of the Jidda Daug, but from the snow with which they are covered all the year round a considerable way down, I conclude that they are as high as the most lofty peaks of the Caucasus.

I was present at a council of the chiefs of the Hukkaneys, and never saw a set of men who had so totally lost all sense of shame: they had no hesitation in confessing themselves liars, cowards, and assassins; and never pretended to possess one particle of probity. They were assembled to decide regarding their conduct towards Persia, at the same time carrying on individually intrigues with them, and at night proposing to their chief a secret attack. This, however, their cowardice effectually prevented. The pass leading along the Zab is even stronger than the most difficult part of the Caucasus, and extends nearly sixteen

miles: it answers the description given of it by the guides of Xenophon; no army could force a passage, and it is difficult even for a single horse. I was obliged to make the guide given me by Mustapha Khan prisoner to conceal my intention of crossing the mountains to Rhumia; he sent a party of horse to intercept us, but I had been joined by a party on the road of which he was not aware. In the skirmish that ensued some of his men were killed. Though we passed over an elevation of 9000 feet (the mountains of Moor), where the snow lay on the ground, the road was good, and the mountains covered with pasture. The twenty-fourth mile brought us into the bed of the Charey river, flowing into the lake of Rhumia, down which we proceeded for eight miles; we then turned over another high range of hills into the district of Soomie, dependent on Rhumia;—the total distance to-day was forty miles. Near the village of Soomie are the remains of three fire-temples, of the most ancient description, formed of large rough stones. From this it is forty miles to Rhumia, over an even and highly cultivated country.

The city of Rhumia is eleven miles from the great lake of Shahey, an exact survey of which I made during the several years I was stationed at Tabrez; and on this occasion I had an opportunity of visiting the islands which it contains. Bezou, a mountain situated to the east of Rhumia, where the boats generally lie (there are only two), the water being there rather deeper than on the other parts of the shore, is supposed to have been the place frequented by Zoroaster before he propagated his religion. It is about 500 feet in height, composed of a soft red sandstone. Half way up there is an imperfect cave or cell, which must have afforded very insufficient protection against the east wind, being inclosed only by a few loose stones. In a little valley below are a few trees, still preserved by the people, and a small spring of water. It is much frequented by pilgrims, both Mahomedan and Ghebers—even some Indians have occasionally come there. The Mahomedans have traced some Arabic characters on the stone, to which they ascribe supernatural agency. In clearing away some stones near the spring we discovered a pot, containing ashes and some fragments of bones, a string of glass beads, and a mass of some metal. Unfortunately the urn was broken in digging, but the fragments exactly resembled those found at Bushui and near Babylon.

The craft prepared for our voyage had a most unpromising appearance, being shaped much like a trunk, perfectly flat, and, though of considerable size, drawing only fourteen inches water; it could, however, only sail directly before the wind, nor be rowed more than two miles per hour. It was capable of carrying about fifty tons. We embarked, altogether twelve persons, and a

fair wind springing up, we got under weigh. A steady but light breeze carried us to a cluster of islands, from which the principal part of the fire-wood used in Rhumia and Tabrez is brought. The distance was sixteen miles, and we ran it in five hours. The lake, for the first two miles, had only three feet water, the bottom a perfectly smooth, hard, blue clay; it then suddenly deepened to five feet for nearly the same distance, when it again deepened to eight: these alterations took place in steps, and at once the next increase was to twelve, subsequently to eighteen and twenty-two, the greatest depth we found. This continued to within a few yards of the Sheep Islands (Coin Adasay), so called from a number being transported there for pasture in winter. This cluster is composed of three large islands and five small ones: Horse Island is the largest and most fertile; a considerable village once existed on it, but its only supply of water is from tanks, there not being a single spring on it; the soil is excellent, and here the largest trees are found. Sheep Island is about the same length (five miles), but seldom more than one and a half in breadth; it is for the most part composed of a fine, compact, but bare limestone, in which flints are sometimes found. Here there is a small spring of water, and a cistern has been dug to receive the rain water; it was at that time full, and we found in it three dead partridges, who had been drowned in attempting to drink. There is some good land, and some wood is still to be found. Ispera is not more than one and a half mile in length; it has more soil, but no water. There are at present no animals on Sheep Island, except an ass, turned loose some years ago, from which the island is sometimes called Ass Island; the sheep are always taken away in the summer. Our boat sometimes carried away as many as 200 at a time. To the south of these islands is another cluster of nine rocks of twenty or thirty feet elevation; wood is also found upon them, but they are of no other importance. The whole number in the lake is said to be fifty-six. It now depended entirely on the wind at what part of the lake we might land; a breeze springing up from the east we were in hopes of regaining nearly the place we started from. The wind changed to the south, which, in the night, took us as far as Gougerchene Kulla (off Salmas). Here I landed, and found forty-five feet water on rounding the head of that impregnable fortress, near which, I was informed, is the deepest part of the lake. This fortress is natural, being sometimes an island, with an abrupt precipice to the land, and sloping to within thirty feet of the lake, where the face becomes also perpendicular. A road to render it accessible, and a gate, are the only artificial works. In the limestone I remarked large oyster shells, none of which fish now exist in the Caspian. There are reservoirs for water, and a small dip of water near the lake.

We were now thirty-four miles from our horses, but fortunately a north wind took us down towards the evening, and I determined not again to try a voyage on this water.

We returned by the usual route to Ali Sha, a village twenty-four miles from Tabrez, to which I sent my luggage, and crossed a dry salt plain, as level as the sea, to the peninsula of Shahey, which is sometimes an island,—in fact, is so at present, if three inches of water constitute it, that depth extending round it. This mass of rocks is forty miles in circumference, and has twelve well inhabited villages. There are here two fortresses, one nearly as strong as Gougerchene Kulla, and called by the same name, —it dates from the time of the followers of Zoroaster. This lake is subject to great variations in its depth and extent: when I first saw it, in 1812, a smooth stone, on which I stood, was washed by the water, which is now ten feet lower. The people give the same account, as of the Caspian, of these changes taking place at intervals of thirty years; of that I can say nothing. They also state that, when at its lowest, the increase is not gradual, but takes place in a few months, from causes totally distinct from rain or the water it receives from the rivers. A number of springs are seen to throw up water, as well in the lake as on the ground abandoned by it, which continue to flow till the lake regains its former level. They showed me some holes, and mounds of clean sand, like that round about springs; but regarding this improbable story I have no observation to make. To me the cause of its decrease was evident. During the time I was in Persia cultivation had much increased, and almost all the water which formerly ran into the lake was taken away for irrigation; only in the spring, when the melting of the snows furnishes a vast supply, did any reach the lake: The water is so salt that no fish can exist in it; the experiments I made showed that it contained nearly twice as much salt as the sea; it is so buoyant that you can with difficulty stand in three feet water, and actually float on the surface. In shoals not agitated by the wind the water forms almost a paste of salt, which dissolves when strongly agitated.

My immediate departure for India will, I trust, afford a sufficient excuse for the hasty and imperfect description of the country which I have now ventured to offer to the Society. I have only given those routes unfrequented by other travellers, though I have travelled over every part of Azerdbijan. Merand has been described as the ancient Moranda; the ruins of that town are only to be traced eleven miles to the west of Mehrande. I subjoin a table of latitudes and longitudes, observed while I was in the country: and have also furnished the Society with some others of weather and temperature of Tabrez, during my residence in that city.

W. M.

Latitudes *and* **Longitudes** *observed in* **Azerdbijan** *and surrounding Countries by* Lieut.-Col. **Monteith** *of the Madras Engineers.*

Names of Places.	Longitude.	Latitude.	Remarks.
Ark of Tabreez	46° 8' 30'	38° 3" 59'	Means of a number of
Vill. of Ali Shah		38 8 10	observations.
Vill. of Sofian		38 17 00	
(Town) Tasutch	45 13 7	38 19 14	The long. by chronometer
Their Salmas. Town		38 9 24	going and returning.
Khoey. City		38 31 33	Means of seven meridian
Karra Ama		39 3 53	altitudes.
Church of Anajuk in Chalderan		39 17 14	
Churse (village)		38 49 40	
Mehrand. Town		38 26 5	
Julfa Rd. Bridge		38 54 30	
Imekshewan City, old		39 11 40	
Sharrow (vill.) Do. Dinga		39 32 7	
Derebloo		39 46 58	
Erivan (city)		48 9 30	Ten meridian altitudes
N. extremity of the lake of Levan		40 37 15	of the ⊙
The Island and Monastry		40 30 30	
S. extremity of the Lake		40 9 40	
Taloon		40 16 41	
Tiflis	45 16 45	41 42 30	Five eclipses of the 1st and
Contais in Immerettia		42 14 28	2nd satellites of Jupiter.
Mouth of the Kalla River—Black Sea	41 35 30	42 14 56	Several observations dif-
Berda Rd.—City in Kara Baug.		40 18 00	fer 3' in longitude from
Oslandoose		39 22 5	the French observation.
Shoor Bullak on Mts. of Khoovosloo		39 7 9	This may be taken as
Dade Bagloo of Mishkeen		38 31 00	the months of the Phasis
Ardabil		38 10 20	in longitude.
Lissan. Rd.—Fort on the Caspian Sea		37 53 19	
Enselli ditto		37 25 28	
Resht (city)	49 26 40	37 18 00	The observations for the
Lankeran		38 40 00	longitude not proving
Lahijan (town)		37 10 45	satisfactory, 3° 18' 10"
Mosalla (vill.)		37 23 21	east of Tabreez, by Mr.
Kherez		37 36 00	Frazer, 49° 42' 53" by
Sha Ballak on Mts. of Midan		37 36 1	the Russians, 46° 27'
Miana (vill.)		37 22 30	30" Lunar Observ.
Trokemanchie Oudjan		37 32 25	
Ourdabad(town) on the river Aras		39 0 0	
Megevi ditto		38 55 30	
Ali Deora		38 54 00	
Ahev (town)		38 28 30	
Dakhergan (town)		37 45 10	
Maraga (city)		37 19 50	
Merhummet Abad		36 54 58	
Sier Kalla		36 38 59	
Karra Batta (vill.)		37 1 26	
Blunina (city)		37 32 40	Five meridian altitudes.
Saldug. Tuza Balla		36 56 32	
Sareskend (vill.)		37 26 5	
Saltarria		36 25 37	
Dervie Monastry in All Bang		38 8 16	}
Arzaatis (castle)		37 51 30	} Kurdistan.
Bash Kalla (castle)		38 2 1	}
Erzeroom (Asia Minor)		39 55 12	Capital of Great Armenia.
Trebezond (city on the Black Sea) French Consul's House	39 44 52	41 0 0	

The latitudes are all deduced from the means of several altitudes, either of the sun or stars.
The longitude by Lunar Observations at Resht, the capital of Ghilan, gave 49° 42' 53", according to Mr. Frazer, an excellent observer. The Russian men-of-war make Enzelli 49° 22' 48", which agrees with the 3° 18' 10" east of Tabreez, deduced from the trigonometrical survey.

ABSTRACT *of the* METEOROLOGICAL REGISTER *kept at* TABREEZ *by* COL. MONTEITH, *reduced from the Originals in the Society's Possession.*

Date.	Mean of Fahrenheit.			Extremes of Fahrenheit.			Prevalent Winds and Weather.
	Morn.	Noon.	Even.	Morn.	Noon.	Night.	
	°	°	°	°	°	°	
1818.							
January ...	13·3	33·5	21·0	7 to 30	18 to 46	5 to 35	E. and E.N.E. Cloudy, with snow.
February ..	8·2	24·3	11·8	6 .. 25	17 .. 38	1 .. 27	E. by N. On the 16th the greatest cold.
March	28·5	46·8	32·7	7 .. 41	34 .. 62	18 .. 41	W.S.W. and E.N.E. Variable, with rain.
1824.							
December ..	43·8	60·5	46·3	32 .. 59	54 .. 68	36 .. 57	E. and S. W. Fine, with rain.
1825.							
January ...	38·7	48·9	37·9	30 .. 48	41 .. 57	34 .. 45	E. Variable weather, with snow.
February ..	40·3	49·8	40·8	32 .. 50	36 .. 66	32 .. 52	W.N.W. and S.W. Fresh gales, with snow.
1829.							
January ...	23·0	35·4	26·0	3 .. 35	22 .. 44	10 .. 38	E. and S.S.E. High winds, with snow.
February ..	21·9	36·3	25·6	12 .. 30	31 .. 52	20 .. 34	E., S.E., and S.S.W. Variable, with snow.
March	34·3	52·6	39·1	27 .. 41	40 .. 67	30 .. 52	E.S.E. Variable, with rain.

March, 1818. The barometer at Tabreez was 25·1 inches, and the temperature of water, in a well 72 feet deep, was 58°.

SKETCH OF THE
COURSE OF THE USUMASINTA,
CENTRAL AMERICA,
to illustrate
Colonel Galindo's
PAPER.

GULF OF MEXICO

YUCATAN

Campeche

Champoton R.

S. Joseph R.

Bacalar

L. Terminos

TABASCO

Tabasco R.

S. Pedro R.

R. Usumasinta

S. Juan Bautista or Villa hermosa

MEXICO

Tulyn R.

Chacamas R.

Palenque R.

Chiapa

Ciudad Real

Pasion R.

Chacop Cr.

R. Hondo

New R.

New River L.

L. Revenge

Haul-over

Belize

Lubmirang Cr.

Belize R.

R. Sibun

L. Peten

Flores

Salchulan R.

S. Pedro R.

Dolores R.

Machaquila R.

De la Pasion R.

S. Isabel R.

Grijalva R.

Comitan

Sacapulas

Gueguetenango

Totonicapan

Quesaltenango

Amilpas Vol.

Vera Paz or Coban

Dulce R.

G. of Dulce

Isabal

Gulf of Honduras

3 Points

Polochic R.

Salama

S. Aug.n Casaguastlan

Encuentros

Motagua R.

Zacapa

Chiquimula

Sotola

Chimaltenango

Mazatenango

Guatemala

Suchiltepeque

GUATEMALA

Amatitlan

Escuintla

Bar Tulate

Bar Iztapa

Bar Michatoya

R. Santiago

Anchorage of Sonsonate

R. Guaza

S. Salvador

Isalcos Vol.

S. Salvador Vol.

Gracias

PACIFIC OCEAN

W. Day, Printer. Published for the Journal of the Royal Geographical Society by John Murray Albemarle Street London 1833 C. Bradbury Lith.

II.—*Description of the River Usumasinta, in Guatemala.* Communicated by Colonel Don Juan Galindo, of the Central American Service, Corresponding Member of the Royal Geographical Society. Dated Flores, on Lake Peten, 12th March, 1832. Read 26th Nov. 1832.

The Usumasinta is peculiarly remarkable among the rivers of this part of America, not only for the length of its course, advantages of its navigation, fertility of its banks, and superiority of the climate of its district, but also for the almost total ignorance in which even the inhabitants of the surrounding country remain with respect to its relative position, its course and branches.

Since my residence in its neighbourhood, having bestowed great labour and pains in exploring this river, the following is a sketch of the result:—

The Usumasinta rises in the district of Petén, which is a subdivision of Verapas, the latter being one of the seven departments of the Central American state of Guatemala.

The source of the Usumasinta is not very distant from that of the Belize (rising on the opposite side of the same mountain ridge, and bordering the bay of Honduras on the south-west); and near its source, where it crosses the old road from Flores to the city of Guatemala, is called the Santa Isabel. It afterwards receives many tributary streams, and becoming navigable for canoes, takes the name of Rio de la Pasion, crossing the new, or western, road to Guatemala. Thence it enters the country of the wild Mayas, where it is joined, from the southward, by the important navigable river of Chicsoi, which rises in the department of Totonicapan, having several villages on its banks nearer its source. The general course of the Usumasinta, from the source to the junction of the Chicsoi, is from east to west, whence it inclines to the north-west, as far as the sea.

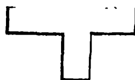
The Mayas, before the Spanish conquest, occupied the whole peninsula of Yucatan, including the districts of Peten, British Honduras, and the eastern part of Tabasco; and though divided into various tribes, the same language was general amongst them, being that still used by the inhabitants of these countries. The only pure remnant of this great nation are some scattered tribes, occupying principally the banks of the rivers Usumasinta, San Pedro, and Pacaitun; their whole territories being politically included in Peten. They are comparatively a harmless, though uncivilized race, clothing themselves with cotton and the bark of the Indian-rubber tree, and depending principally on fishing and hunting for their support,—in the latter making use of flint-headed arrows. They also cultivate maize, cacao, and tobacco,—the latter of a very superior quality.

A chain of mountains separates the Maya territories from the

Mexican states, in crossing which the continued navigation of the Usumasinta is interrupted by a considerable cataract. Near these falls, and within an extensive cave on the left bank, are some extraordinary and magnificent ruins; and somewhat lower down the stream there is a remarkable monumental stone, with characters. These objects, the ruins of Palenque*, and other numerous

* [The following account of these ruins is also by Colonel Galindo, who is governor of the adjoining province. It has been already printed (Literary Gazette, No. 769), but seems worthy of preservation here, a member of the Royal Geographical Society, now in Mexico, having undertaken to correspond with the Society respecting the other similar ruins in that country.]

'These ruins extend for more than twenty miles, along the summit of the ridge which separates the country of the wild Maya Indians (included in the district of Peten) from the state of Chiapas, and must anciently have embraced a city and its suburbs. The principal buildings are erected on the most prominent heights, and to several of them, if not to all, stairs were constructed. From the hollows beneath, the steps, as well as all the vestiges which time has left, are wholly of stone and plaster. The principal edifice I have discovered, and style the palace, is built in several squares; but the main halls, or galleries, run in a direction from the N.N.E. to the S.S.W. Allowing for the variation of the compass, which is 9° E., this position, and its perpendicular, are most exactly observed in all the edifices I have examined, be their situation what it may. This is the more remarkable, as it does not arise from the formation of streets, as no such regular communications existed between the houses. These are formed of galleries eight feet wide, separated by walls a yard thick, and two rows of galleries complete the building: the height of the walls to the eaves is nine feet, and thence three yards more to the top, to which the roofs incline, being covered by horizontal stones a foot wide. The chasms between the inner roofs of the two galleries were originally filled up, though containing large niches, and now universally grown over with bushes and trees. The stones, of which all the edifices are built, are about eighteen inches long, nine broad, and two thick, cemented by mortar, and gradually inclining when they form a roof, but always placed horizontally: the outside eaves are supported by large stones, which project about two feet. Doors are numerous in all the halls; and the spaces which contained the top beams are exactly preserved in the stone, though the wood-work has entirely disappeared. All the habitations must have been exceedingly dark, if the doors were of wood and kept shut; as the windows, though many, are but small, circular and square perforations, and subject to no particular arrangement. Evidently, the architects avoided symmetry, not from ignorance but design. Besides the niches in the roof and the windows, the walls are perforated by holes of this shape,



each about two feet wide: they are very frequent; and, though they completely pierce the wall, are separated in the middle by a partition of plaster: their use I cannot divine. Several holes in the walls also contain stone pillars, of from six inches to one foot high; some capable of holding the strongest animal, and others delicately small; inserted both high and low, and not always opposite to one another.

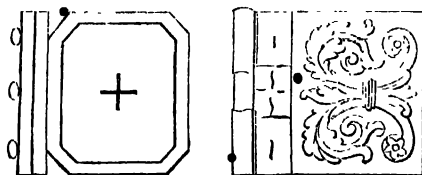
'The front of the palace contains five doors, lofty and wide, as in all the buildings; on each of the pillars which separate them is an erect human figure in relievo: in most of these, throughout the ruins, it is difficult to distinguish men from women, as their dress appears the same; the head adorned with high plumes, the breast and arms naked, with necklaces and bracelets, and sometimes covered by a short tippet; the middle and thighs inclosed in a wrapper, crowded with ornaments, and its ends finely worked, hanging down between the legs, which are naked, as well as the feet. Some figures are distinguished by the awkward height of their head-dress, and the unnatural horizontal projection of the bows and ends of the sash which fastens the wrapper: all the heads are in profile, and many hold

remains contained in the countries watered by the Usumasinta and its branches, prove that at a period of remote antiquity (cer-

long staves in their hands, headed by some undefinable objects; but no weapons are to be seen with any of the figures or basso-relievos, and none have ever been found but flint heads of arrows or lances, similar, though larger, to those used by the wild Indians at the present day. There are also some squatted figures, apparently of plebeians, with wrappers, but without any ornaments or head-dress. The sashes, &c. of several appear to have been coloured, and even much of the writing was painted.

The grand centre entrance of the palace, joining its two front galleries, and under which I have bivouacked, never had any door, and its top is circular: behind the second gallery, steps descend into an inner court, and on each side of them are three gigantic busts, worked in relievo, on inclined stones. In another of the courts are the remains of a square tower, still about a hundred feet high, as its top has fallen: the steps which lead up through its interior are rectangular, and it contains a regular series of doors or windows. In one of the galleries of the palace is a sort of picture, contained on a stone of an oval shape, about two yards in diameter; the figures are in relievo, and still bear evidence of having been coloured: a female, dressed as above described, and with ear-rings, sits cross-legged on a seat or sofa, which is just large enough to hold her, and has at each end the representation of an animal's head, with a collar round the neck; a person, apparently an old woman, dressed in a tippet and wrapper, both worked like a plaid, presents, on her knees, to the sitting female, a human head, adorned with a solitary tuft of feathers. *The back of the head is turned towards the lady*, who looks earnestly on it, while her expression of grief and horror is well represented,—her right hand is near her heart, and the left rests on her thigh. Some square tablets are inscribed in the upper part of the picture; the wall around is of various colours, and an inscription on the cornice overhead is painted in two horizontal rows of small square tablets. Near this is the principal entrance to the vaults, which run underneath the palace, and which I have explored by candle-light, though much annoyed by the large bats that infest all the ruins. Over this same entrance are worked, in relievo, the figure of a rabbit on one side, and an ugly human figure on the other; both surrounded by filigree work, apparently imitating boughs and feathers. The architecture of the vaults is similar to that of the buildings above ground. A female head, over one of the passages, with an ornament pendent from her nose, represents grief or sleep. This circumstance, and that of the vaults containing a number of what are apparently stone couches, led me to suppose they were used as dormitories.

The building which I name the study stands on a neighbouring and higher hill than the palace, and the ascent to it is very steep; it has five doors, each with evidence of having contained wooden frames; the pillars or walls separating them contain full-length figures of about six feet high, one of which is dressed in a petticoat, reaching nearly to the ankle, and fringed at the bottom, bearing, as well as another figure, naked infants on the right arm, and not in the manner of the modern Indian women, who always set their children astride on their hips. The inside walls of the study contain three large stone quadrangles, each divided by indented lines into 240 equal compartments, about six inches square, twelve running from top to bottom, and twenty from side to side, and containing different characters in relievo. I have copied those in best preservation, of which the two following are a specimen:—the same characters appear to be very rarely repeated in the various tablets.



tainly prior to the fourteenth century, when Mexico was founded) this was the most civilized portion of America.

'A building, apparently used for religious purposes, stands on a hill in the vicinity, and still higher than the preceding edifices; two galleries form its foundation; the front one occupying its whole length, the back divided into three compartments. The eastern of these has the appearance of a dungeon, though its very small entrance has no evidence of a door. The western compartment is a simple room; the centre piece is also without a door; but, from the pillars inserted, as already described, in the walls, I conjecture it had curtains. This room has a small chapel built within it, having a flat top: the back of the chapel, and two stone slabs which form the front, but leave between them a wide entrance, are highly and elegantly worked in relievo. On the west stone is the representation of a man looking towards the entrance, his head adorned with boughs and feathers; a small crane is seated on one of the boughs, with a fish in its mouth: he has a tippet, trousers halfway down the thigh, bands round his calves, and a sort of boot without soles, only covering the back of the leg,—a horrid figure, squatted down, with its back turned to the upright one, has no feet, but its legs terminate in a tail. The other slab contains a hideous old man, with a bough in his mouth. Opposite these two figures are stone pillars, as elsewhere observed, both near the floor and higher up, to which victims or culprits may have been tied. Inside, on the back wall of the chapel, are two small human figures; the larger one placing the head of a man, adorned with feathers, on the top of a cross, *such a one exactly as used by Christians;* the other represents a child, both looking at the head, barefooted, with their ankles adorned; behind each of them are sets of square tablets, containing characters very neatly executed. Perhaps I am wrong in supposing this to be a chapel, and that human victims were sacrificed in it; these deeds have generally been executed in the presence of large assemblies of people, while but comparatively few could have witnessed them if done here. This might, therefore, have been a canopy, under which magistrates sat in the administration of justice. Above all these rooms, two narrow parallel walls ascend to a height of eighty feet above the ground: they are perforated by squares, and between them one ascends by projecting stones to the top, whence there is a most extensive view over the plains to the north.

'About two hundred yards below the palace, a limpid stream has its rise; it bursts from between the rocks, and is covered over from its source, for more than a hundred yards, by a gallery, which follows its bend; where the gallery ends, there is evidence of a continuation of edifices for about fifty yards more down the course of the stream: the whole appears a strange arrangement.

'Not far hence is a prison on the edge of a stupendous precipice: by placing a stone over it, the captive was effectually prevented from escaping, though large windows in the edge of the precipice admitted light and an extensive view.

'The whole of the ruins are now buried in a thick forest; and months might be delightfully employed in exploring them. My time is unfortunately limited; but I have seen sufficient to ascertain the high civilization of their former inhabitants, and that they possessed the art of representing sounds by signs, with which I hitherto believed that no Americans, previous to the conquest, were acquainted.

'The neighbouring country, for many leagues distant, contains remains of the ancient labours of its people—bridges, reservoirs, monumental inscriptions, subterraneous edifices, &c.; but this spot was evidently the capital, and none could be better chosen for the metropolis of a civilized, commercial, and extended nation; having, from its elevation, a most delightful temperature; behind it a still cooler region for the supply of such productions as a warmer sun does not admit of; and before it the extensive, flat, and hot regions of Tabasco and Yucatan,—the former, in the more immediate neighbourhood, intersected by large, deep, and navigable rivers, which, with their innumerable ramifications and connexions with the sea, offer every facility for an immense commerce. It is strikingly remarkable, the almost exact corresponding situation of this country in the new, with that which Egypt held in the old world, placed at the junction of the northern and southern continents, with a mediterranean sea, a delta, and an isthmus. Everything bears testimony that these surprising people were not physically dissimilar from the pre-

The banks of the Usumasinta, after passing the ridge, are studded with various Mexican villages, the inhabitants of which find a lucrative employment in the cutting of log-wood. Further down, the river is joined by the San Pedro from the east.

The river San Pedro rises near the lake of Peten, and traversing the district, further down, on being joined by the stream of Yalchilan, forms the national boundary of central America and Mexico. The waters of the San Pedro possess petrifying qualities to a most extraordinary degree, the numerous reefs and dams in its stream being formed entirely by petrified wood. Where channels have been cut deep in the rocks, both the lower and the upper part appear to be petrifaction, which has gradually grown above the original wood; and where the current is most rapid, the petrifaction is most speedily performed. A navigable canal, called the Chocop, joins the San Pedro to the Pacaitun, which latter river runs into the lake of Terminos.

Below the mouth of the San Pedro, the Usumasinta is joined, from the south, by the navigable stream of Chacamas, which rises in the hills on which stand the ruins of Palenque.

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sent Indians; but their civilization far surpassed that of the Mexicans and Peruvians: they must have existed long prior to the fourteenth century; since the former, who would have been their neighbours, and not deficient in enterprise and talent, would certainly otherwise have learnt from them the art of writing. I would say, that this nation was destroyed by an irruption of barbarians from the northwest, which is an additional reason for giving them a much higher antiquity than the foundation of Mexico, as long previous to that event it is known that no such irruptions had taken place.

'I also presume, that the Maya language is derived from them: it is still spoken by all the Indians, and even by most of the other inhabitants throughout Yucatan, the district of Peten, and the eastern part of Tabasco; the Puctunc, a slight corruption of it, is spoken in this immediate vicinity, and to the south-west, nearly as far as the Pacific. Why this original language should be more corrupted near the ancient seat of empire than in the distant provinces, is no more to be accounted for than the greater similarity of the Portuguese than the Italian to the Latin. The following words are Maya and Puctunc,—*king*, sun; *uh*, moon; *ek*, stars; *ha*, water; *kak*, fire. There is a great similarity between these languages and those spoken farther to the south throughout the state of Guatemala, particularly in numeration, which, in the Puctunc, is as follows, and the Maya differs but little from it:—1, humpel; 2, chapel; 3, ushpel; 4, chumpel; 5, hopel; 6, wokpel; 7, hukpel; 8, washakpel; 9, bolompel; 10, lakumpel.

'With regard to the present inhabitants of these regions, the wild Indians to the south are an uncivilized and timid tribe, who occupy an immense tract of country in the interior of the continent; and the subdued Indians, who inhabit the states of Chiapas and Tabasco, are equally in a low scale of improvement. When asked who built these edifices, they reply, "The devil!" A pretty village, styled Palenque, and which has had the honour of giving its name to these ruins, was built about a century ago, six miles to the north-east. The longevity of its inhabitants, and the beauty of its women, prove the excellence of this climate. At a party there, a few days ago, I inquired of the priest and alcalde, as the oracles of Palenque, who they supposed were the builders of these ancient edifices. The priest shook his head, and hinted at their being antediluvian! while the alcalde stoutly affirmed that they must have been built by a colony of Spaniards, prior to the conquest.'

The Tulijá, which further down falls into the Usumasinta from the south-west, is remarkable for the remains of a stone bridge whose arches are under water, and on the right side the stream has separated the bridge from the bank. The Tulijá, at this spot, is about a quarter of a mile in breadth. This bridge I consider of the same antiquity as the other ruins of the country.

The river Tabasco, which, near the sea, also joins the Usumasinta from the south-west, flows by the city of San Juan Bautista, formerly Villa Fermosa, capital of the state of Tabasco, a port of entry much frequented by vessels from the United States of North America.

The Usumasinta, below the cataract, is navigated in boats of considerable burthen, and flows in numerous channels and ramifications; but its principal mouth is at the port of Victoria, where it joins the bay of Campeachy, to the westward of the lake of Terminos. The bar at the mouth is passed by merchant vessels, which sail up to San Juan Bautista.

III.—*Account of the Route to be pursued by the Arctic Land Expedition in Search of Captain Ross.* Communicated by Captain Back, R. N. Read, 10th Dec. 1831.

It is almost unnecessary to state that the sympathy of the public has been warmly excited in favour of a projected expedition to go in search of, and if possible to afford relief to, Captain Ross and his crew of nineteen persons, who have been absent a little more than three years from England.

The narrative of the Albany and Discovery, as quoted from Mr. Barrow's Chronological History of Arctic Voyages, is too generally circulated to require repetition here; and in reference to Ross and his gallant associates, we may certainly say, in the language of the same distinguished author, that it is impossible to 'contemplate their forlorn situation without the deepest emotion for the unhappy fate of so many wretched beings, cut off from all 'human aid, and almost from all hope of ever being able to leave their dark and dismal abode.'—(p. 151.)

The projected expedition will consist of two officers and about eighteen men, all of them accustomed to the duties and fatigue of travelling in America; and some of Sir John Franklin's companions on his last journey have volunteered their services on the occasion. It is of importance that the party, when furnished with such supplies as may be deemed essential, should leave Liverpool

either in January or early in February, in order to get to New York, and thence to Montreal by the 10th of April.

This would allow sufficient time to engage Canadian voyageurs as steersmen and guides, as well as to prepare the equipment usual on proceeding into the interior,—such as assorted stores of trading goods, ammunition, and a plentiful supply of provisions. A *canot de maître*, which is much larger than the *north-canoe*, is sufficient to carry the packages and crew; and by the 1st of May it is hoped they will be on Lake Huron. The route lies along the northern shores of this lake, which are sterile and uninteresting, with little other variety than an occasional mountain or high land. The Manatouline islands, rich in fossils, run almost parallel, and terminate at the Sault de St. Marie, by which the waters of Lake Superior are discharged into Lake Huron, 'the descent not being more than twenty feet, in a distance of four or five hundred yards.'—(Major Long's *Journey*, p. 237.)

From the vast quantity of fish that was caught at the Sault, it was formerly a favourite resort of the Indians of the Algonquin tribe, but even in Sir Alexander Mackenzie's time they had become reduced to about thirty families, 'who are,' says he, 'one half of the year starving, and the other half intoxicated.'—(Mackenzie, p. 38.) It is usual to obtain a fresh supply of provisions at the Sault, and then to follow the trendings of the northern shore of Lake Superior across Michipicoton Bay, to the entrance of the Kamanatekwoya, or Dog River, on the right bank of which stands the Hudson's Bay Company's post, Fort William. The country skirting the north side of the lake 'is indented with numerous bays and inlets, and presents an uninterrupted succession of hills, based upon rocks, and faced with precipices.'—(Major Long, p. 235.) These hills do not attain an elevation of more than four hundred feet, with the solitary exception of Thunder Mountain, which is about six hundred.

In describing the scenery of this lake, Major Long says, 'the country along the lake is one of the most dreary imaginable, considering its latitude, and the facility with which it may be approached. Its surface is everywhere rocky, broken, and unproductive, even in the natural growth of trees common to rugged stations; its climate is cold and inhospitable; the means of subsistence are so circumscribed that man finds no possibility of residing on it in a savage state. Game is extremely scarce. Few, if any, esculent plants grow spontaneously. Fish, it is true, abound in its waters, but only such as can be plentifully caught by means of nets; and the total absence of sandy beaches along the greater part of its extent prevents their use, and thus precludes even this last mode of subsistence. Accordingly, all the Chippewas that we saw on the lake did not exceed half a dozen families.'—(p. 199.)

At Fort William the canot de maître will be exchanged for the two north-canoes provided for the expedition by the Hudson's Bay Company, and a supply of Indian corn and fat will also be procured. Where other food is not abundant these two substances form the regular rations of the voyageurs, and by many are even preferred to their favourite pemmican. The corn is prepared by boiling in a strong alkali, which takes off the outer husk; it is then well washed, and carefully dried upon stages,—when it is fit for use. One quart of this is boiled over a moderate fire in a gallon of water, to which a couple of ounces of melted suet are added, which 'cause the corn to split' and make a 'pretty thick pudding, named *hominee.*' It is considered a 'wholesome, palatable food, and easy of digestion.'

In ascending the river Kamanatckwoya, the route is impeded by seventeen 'portages' and 'decharges.' One of the portages is occasioned by the falls of Kakabikka (a cleft rock), 'remarkable on account of the volume of water which they present,—the great height from which it falls,—the picturesque appearance of the rocks which surround the cascade,—the wildness of the vegetation that accompanies it,—and, finally, on account of the very great noise which it produces,' and which is thought to be 'far greater than that of Niagara.' The perpendicular pitch of the rock is about one hundred and thirty feet, and it is composed of mica slate, with horizontal strata of quartz.—(Major Long, p. 136.) Directly opposite, or on the north side of the river, is a cavity in the rock, which, in the superstitious legends of the Indians, is regarded as the residence of an evil spirit. Muddy Lake, which lies a little farther on, in the direct line of route, seems to possess a peculiar property, the cause of which has not yet been explained, —it is that of attracting in a manner to require unusual exertion on the part of the voyageurs to force their canoes over it. Sir Alexander Mackenzie notices this circumstance, and distinctly says that 'he found it very difficult to get away from this attractive power, six men, and great exertion, having been required to overcome it'—(Mackenzie, *Introduction*); and during the late expedition, under Sir John Franklin, our heavy canoes met the same obstruction,—the lake at the time being slightly agitated by a moderate breeze, but devoid of whirlpools, or any bubbling to account for such an effect. On quitting this singular lake we are led to the 'Portage de la Prairie'—'one end of which communicates with the waters of Lake Winnipeg, while the streams at the other end flow towards Lake Superior.'—(Major Long, p. 126.) This, accordingly, is the dividing ridge, and is extremely swampy.

'Although the country is hilly near the summit level, yet the highest ground between the waters of the Winnipeg and St. Lawrence is not more than one hundred and fifty feet above the level

of the two lakes. The highest water running to the St. Lawrence is a small pool called "Cold Water Lake," only one hundred and fifty yards long and about twenty wide. Its name is appropriate, the temperature of its water being lower than that of the surrounding lakes and streams. It is supplied by a spring issuing from the side of a hill, and which is not more than two hundred yards from the lake. Its temperature was only 41° of Fahrenheit, whilst the lake was about 42°, and that of the atmosphere at the time of the observation 63°. We saw no rocks *in situ* about the spring, but entertain no doubt that the whole country is granitic.'

Passing through a number of small rivers, in which frequent rapids impede the progress of the voyageur, we arrive at Rainy Lake; and after travelling about fifty miles, among islands formed for the most part of mica-slate, the route is again interrupted by a waterfall of twenty-five feet descent, adjacent to the company's establishment at the head of the Rainy River. The rock here is chiefly sienite, and the banks of the river are well wooded with pitch pine, white pine, and spruce. After a course of one hundred miles Rainy River falls into the 'Lake of the Woods,' which is studded with islands, and has a notoriety amongst the voyageurs for the dangerous, sudden, and violent squalls of wind which frequently surprise them in the middle of the 'grande traverse,' and expose them to serious loss or long detention. Its circumference is said to be near 'three hundred miles, and its shores are much indented by bays, in which an immense quantity of wild rice is annually collected.' On the islands, which are covered 'with small trees, chiefly pine, spruce, hazel, willow, cherry, &c. &c., besides vast quantities of bushes bearing berries, the prickly pear is to be seen.'—(Major Long, p. 105.) After crossing the Rat Portage we get to the River Winnipeg, which is a noble stream, though fraught with danger, and full of rapids, cascades, and waterfalls, and one is admonished of the fatal accidents that have occurred, by the many wooden crosses placed on the banks. They are the mementos erected by survivors to the memory of their lost companions, and form as it were beacons to point out the most dangerous spots.

Below the Slave Fall the rocks are chiefly gniess or granite; their outline is bold, and they present many basins or coves, in which the water forms eddies, and not unfrequently a smooth expanse, contrasting well with the rough billows of the adjoining torrent. The red colour of the sienite is relieved by streaks of black mica, which intersect its surface and have the appearance of designs executed on a gigantic scale. The most attractive spot, perhaps, on this river is that which has received the name of 'The Fall of the Moving Waters,' which partakes of the character of a 'troubled ocean,' whose waves rise high and beat against

the adjoining shores. 'One of the most imposing characters of these falls also is the noise which they produce, and which, taking their size into consideration, is equally thought to exceed that of Niagara, Montmorency, Schaffhausen, St. Anthony, or the Cohoes. The river falls into Lake Winnipeg in about 50° 36′ north latitude. Few lakes receive so many and such large streams as this; by some of these, and by the rivers which flow from it, a direct communication is kept up, not only with several distant points of the Eastern and Atlantic Ocean, but also with the Pacific or Western.' Its length is about two hundred and seventy miles.

The expedition will hence continue to follow the regular route to Cumberland House, at which place the canoes will be exchanged for two boats of sufficient dimensions to carry the sixty bags of pemmican, furnished by the liberality of the Hudson's Bay Company. Pemmican is made of the dried and pounded flesh of the buffalo, moose or rein deer, with a proportionate quantity of the fat of the same animals; it is put into bags of ninety pounds each, and, if well preserved, will keep good for several years, being decidedly the most substantial as well as the best adapted food for the country. Several bales of goods, combining all those in general use for Indian traffic and presents, will also be in readiness at Cumberland House; and thus equipped with the *matériel* necessary for forming a new establishment, together with the sixty bags of pemmican already mentioned, the party will make the best of its way across Pine Island Lake and along the river tracks shown in the map, to Isle à la Crosse, Buffalo and Methye Lakes, as far as Portage la Loche, or Methye Portage. This is the next height of land, or 'part of the range of mountains which separates the waters flowing south from those flowing north.'—(Franklin, p. 131.) 'According to Sir Alexander Mackenzie, 'this range of hills continues in a south-west direction until its height is lost between the Saskatchewan and Elk rivers, near the banks of the former, in lat. 53° 36′ N., long. 113° 45′ W. The Portage is in lat. 56° 41′ 40″ N., long. 109° 52′ 15″ W., and is twelve miles in length. The boats and canoes have to be dragged or carried across it,—a work of time and considerable difficulty. The valley on the north side is upwards of one thousand feet deep, and the view from the summit full thirty miles in extent.

The stream being now favourable, the voyageur enjoys a short respite until the numerous rapids and portages in the Washacummoo or Clear Water River again call forth his exertions. 'At the distance of ten miles below the Portage the channel of the river is obstructed by a ridge of limestone, which appears to have once blocked up the outlet of the valley altogether, for portions of it still rise from the solid strata through the thin sandy soil of the plain to the height of fifty or sixty feet. These pro-

jecting parts have generally a columnar form, and bear from their arrangement a striking resemblance to the ruins of an extensive city.'—(Franklin, p. 515; Richardson's Geog. Observ.)

After entering the Elk River the country becomes less hilly, and before getting to an establishment called 'Pierre au Calumet,' situated on the right bank of the stream, there is (says Dr. Richardson) a limestone, having its strata waved or dipping both to the east and west. Farther down the river there is a peaty bog, whose crevices are filled with petroleum, a mineral which exists in great abundance in this district. We never observed it flowing from the limestone but always above it, and generally agglutinating the beds of sand into a kind of pitchy sandstone. Sometimes fragments of this stone contain so much petroleum as to float down the stream. The limestone dips under the water, and disappears at Pierre au Calumet, and the pitchy sandstone cliffs, which rest on it, also terminate there. This spot, situate between three or four 'miles below an old fort, obtains its name from a bed of yellowish-grey compact marl, which forms a small cliff on the bank of the river, and is quarried by the voyageurs for the purpose of making "calumets," or pipes.'—(Appendix, Franklin's Journey, No. I.)

The stream continues smooth and unbroken by rapids, and flows into the Athabasca Lake, amidst 'low and alluvial' land 'containing much vegetable matter, and overgrown with willows and aspens.'—Near the western extremity of the lake is Fort Chipewyan, where a further stock of pemmican would have been deposited, had the gentlemen of the Hudson's Bay Company been apprized in time to have collected it; though, from the arrangements that have taken place, there is little doubt that an additional quantity of bags will eventually be supplied for a period when it will be more serviceable than at the moment of the expedition passing.

'The country around Fort Chipewyan is composed of roundish masses of naked rock, which, heaped as it were on each other, and rising as they recede from the lake, attain, at the distance of a mile from the shore, an elevation of five or six hundred feet. The valleys are narrow, their sides often precipitous, and the general form of the hills may be termed short-conical, though their outline is very uneven. The rocks also form many islands in the lake, from two to three hundred feet high, and generally bounded on one or more sides by precipices. The fort seems to stand upon granite rock.'—(Appendix, No. I., p. 516.)

Passing through Stony River we follow the stream of the Slave River, which, for some distance, is bordered by granitic rocks, and interrupted by a succession of falls and rapids, below which the banks are alluvial. 'A great quantity of large drift timber is brought down by Peace River; and as the trees retain their

roots, which are often loaded with earth or stones, they readily sink, especially when water-soaked, and accumulating in the eddies form shoals which ultimately augment into islands. A thicket of small willows covers the new-formed island as soon as it appears above water, and their fibrous roots serve to bind the whole firmly together. Sections of these islands are annually made by the river, assisted by the frost; and it is interesting to study the diversity of appearance they present, according to their different ages. The trunks of the trees gradually decay until they are converted into a blackish-brown substance resembling peat, but which retains more or less of the fibrous structure of the wood; and layers of this often alternate with layers of clay and sand, the whole being penetrated to the depth of four or five yards, or more, by the long fibrous roots of the willows. A deposit of this kind, with the aid of a little infiltration of bituminous matter, would produce an excellent imitation of coal with vegetable impressions of the willow root. What appears most remarkable is the horizontal slaty structure which the older alluvial banks present, or the regular curve which the strata assume from unequal subsidence. It was on the rivers only that we could observe sections of these deposits, but the same operation goes on, on a much more magnificent scale, in the lakes.'—(Richardson, Appendix, No. I. p. 518.)

On entering Great Slave Lake, instead of taking a northerly or a north-westerly direction, as Sir John Franklin did in his two journeys to the Coppermine and Mackenzie Rivers, the present expedition will coast the southern shores of the lake to its eastern extremity;—whence it will proceed, by a route well known to the natives, to the banks of the Thlov-ee-cho, or Great Fish River. Hearne crossed this river high up, and describes it as flowing through a country so abounding in animals as not only to furnish an ample supply to his party at that time, consisting of two hundred people, but also to enable the Indians to kill 'great numbers of deer merely for the fat, marrow, and tongues.' This author likewise informs us, that the lakes are rich in fish. Hearne is the only European who has traversed that district, but the incidental notices contained in his work tend to confirm the more detailed accounts we received from the natives, of the vicinity of the Great Fish River being well adapted for the winter residence and support of an exploring party, both on account of its woods and the game that resorts to them. From the Indians we also learn, that the access from Great Slave Lake to the Fish River is easy, the water communication being interrupted by only three short portages. Indeed, as the rising ground in which the river originates is the same that I crossed, in my several journeys to and from Fort Enterprise, when I was attached to Sir John Franklin's First Expedition, I should not, even in the absence of

all Indian information, expect to meet with any obstacles that I could not surmount in a very few days, with the means to be placed at my disposal. The Indians unanimously agree in reporting the river to be larger than the Coppermine, and therefore more navigable; and if it rises, as they say, farther to the southward, as the direction of the rising grounds and Hearne's map would also lead us to believe, its length will be greater; and, originating as it does in a less elevation, its descent, and consequently the number or magnitude of its rapids, will be less. From clumps of wood having been observed growing near its mouth, I have been led to think that it falls into the Arctic Sea, nearly in the same parallel of latitude that the Coppermine does. The longitude of its mouth can with less certainty be deduced from the reports of the Chepewyans. This people, about thirty years ago, were accustomed to make war on the Esquimaux, and in their hostile journeys along the coast for that purpose, they were wont to cut across the land from the mouth of one large stream to that of another, knowing that at such places they were likely to find the people they sought. I have seen several maps, traced by these Indian warriors, on which the distances were indicated by the number of nights they slept on their journeys between the rivers; and, judging from them, I should be inclined to fix the debouche of the river near the hundredth meridian. These maps concur in exhibiting a far projecting promontory between the Coppermine and Fish Rivers, another to the eastward of the latter, and three small islands off its mouth. The debouche of this river into or opposite Regent's Inlet points it out as well adapted for the starting-point of a boat expedition, in search of the crew of any vessel known to have had the intention of visiting the wreck of the Fury: and the route which the expedition will take from the United States to its ultimate starting-point presents a water communication from the great Canadian lakes to the Arctic Sea, interrupted by numerous portages it is true, but by only one that merits remark for the length of time that it will detain the party, namely, the *Portage la Loche*, which is twelve miles long. The others, though inconvenient from their frequency, are comparatively short, averaging considerably less than a mile.

IV.—*Supposed Junction of the Rivers Gambia and Casamanza, on the Western Coast of Africa.* Communicated by R. W. Hay, Esq. V.P. Read 10th December, 1832.

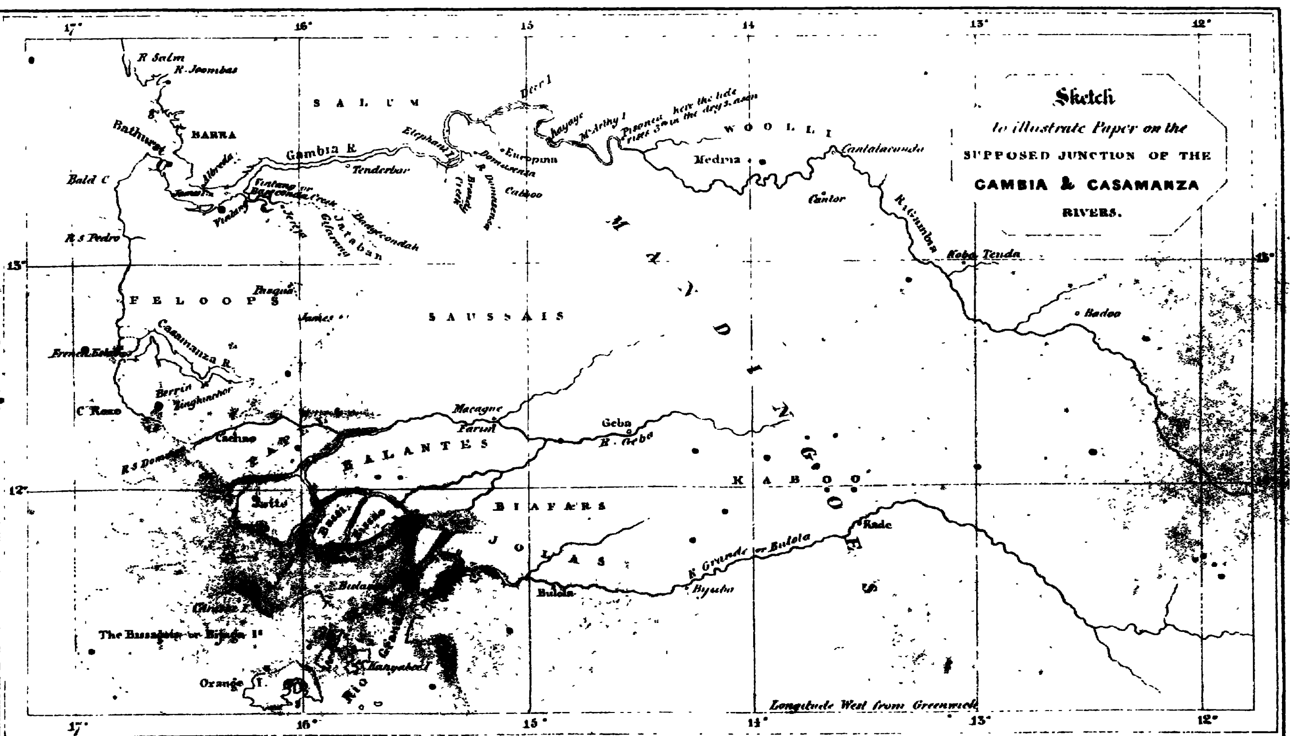
It may be briefly stated to the Geographical Society that in consequence of its becoming known, some years ago, to his Majesty's government that the French had determined to form a settlement in the Casamanza, steps were taken, then and since, to ascertain whether this river was not a branch of the Gambia; and some geographical information has been thus collected which may not be without interest to the society.

In 1828 his Majesty's surveying vessel, Hecla, proceeded to the western coast of Africa, and Captain Boteler was directed to give his particular attention to the inquiry proposed to him respecting the two rivers.

The result of Captain Boteler's inquiries 'induced him to consider it a fact that there is no communication whatever between them navigable to aught else than a very small canoe, which possibly, perhaps, at the highest tides, by means of intersecting rivulets and drains, might effect a junction; yet even in favour of this supposition (Captain Boteler says) there is no argument other than vague rumours and unsubstantiated reports, which are totally at variance with the statements of the most respectable natives, who, in their extensive mercantile pursuits, must be aware of the fact, if it does exist, and who well know that the publicity of such would be to their interest, by facilitating the conveying of their commerce through the territory of the Feloops, a wild and plundering tribe.'

Captain Boteler's conclusion was not founded, however, on actual survey; he reported upon hearsay only. He considered boat-work in the Casamanza (especially for surveying purposes) as highly dangerous, and he apprehended that if he had pursued any further steps than those which he took, they would have been attended with a sweeping mortality, without any apparent prospect of obtaining the object in view. His observations will therefore be received with a certain degree of reserve; and this paper will conclude with a communication very recently received from the Lieutenant-Governor at the Gambia, detailing the particulars of an excursion which he had undertaken up the river Gambia, in which, although he did not make any conclusive discovery in regard to the junction of that river with the Casamanza, yet he acquired a stronger conviction than ever of its existence.

Captain Boteler's observations as to the supposed junction are as follows:—



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In favour of it.

1. 'In Ogilby's History of Africa, published in 1670, a chart of the west coast is introduced, wherein the De Rha, or Casamanza, is omitted, but the rivers Gambia and Cacheo, on either side of it, are made to join. [N.B.—This authority is entered, but certainly is too vague to be admitted as an argument for the junction.]—2. The French government chart of M. Bellin, published in 1753, and again in 1765, notices the junction by the Vintang (or Vintam) Creek, but omits the other alleged one by the creek opposite Elephant Island.—3. The Vintang junction is also inserted in a chart of 1756, by M. Philip Buache; likewise of French authority.—4. Mr. Thos. Jeffery's chart, published in 1768, admits the junction by the Vintang Creek, and in a note states that some charts insert another junction, opposite Elephant Island.—5. Mr. Woodville's chart, published by Laurie and Whittle, in 1797, admits both junctions.—These are the only arguments in favour of the junction.'

Against it.

'The statement of Mr. Joiner goes strongly to prove that there is no junction whatever between the two rivers.

'This person, who is of colour, and one of the principal merchants at Bathurst, is a native of the country immediately in the vicinity of the creek (Domaseusa) opposite Elephant Island. He has frequently been up it in small vessels and canoes, and affirms that it takes a direction into the interior; that it is deep at the entrance, but soon shoals so much that one of his schooners, drawing six feet, could not ascend higher than the town of Domaseusa, situated seven miles up. After this the creek is only navigable for canoes, and even by them not more than fifteen miles further, abreast of Europennah, where it becomes dry; but its channel still remains, and, during the rainy season, is flooded many miles higher, to a place called Cabboo.

'In 1810 Mr. Joiner had much commercial intercourse with the Portuguese at Zinghinchor, in the river Casamanza, and on that account was anxious to *discover an inland junction between the two rivers*, which he was led to hope was the case, on account of its being so represented in Woodville's chart, which he had by him. The Domaseusal junction, he well knew, from his own observations, did not exist, and therefore determined to try the other alleged one by the Vintang, notwithstanding the repeated assurances of the natives that the attempt would be fruitless.

'He manned a large canoe with fourteen hands, well armed, and having provisioned them for seven days, sent them up to Vintang Creek, to prosecute the exploration of the Badjecoondah, which branches off from it, and is, in fact, a continuation of the

same stream under a different name. The canoe, however, after a minute search, returned unsuccessful; and as, independent of the result of their exertions, the authority of all the natives they met tended to prove, in the fullest degree, that there was no junction between the two rivers, the idea was altogether given up, and Woodville's chart, in that respect, considered to be erroneous.

'Since this period Mr. Joiner has often ascended the Badjecoondah, and from his personal experience thus gained, he feels convinced that it does not join the Casamanza. The creeks which branch off in that direction from the Badjecoondah, are not larger than ditches or rivulets, and have been explored; and even had they not been so, the direction of their tides would alone convince a stranger that they are merely tributary streams to the Badjecoondah. And this statement perfectly coincides with the information I have gained from various others, who possess a local knowledge of the place, and more especially from Mr. Hunter, a gentleman residing at Bathurst, who, for some years, has been in the habit of ascending the Gambia and its branches on wood-cutting expeditions, which are carried up to so great a distance, and in such bye places that it appears strange that an idea could be entertained that a junction exists between the two rivers. In fact, the old charts are the only evidence in favour of it, which evidence I consider may now be set aside by the experience of the present day; and certainly, as far as regards the fact of the Casamanza being a branch of the Gambia, I feel confident that it is not the case (unless further up than the charts give it), and almost so that there is not even a partial junction, passable in the smallest canoe, during the floods of the rainy season.

'From Jereja the Badjecoondah winds up to a town bearing its name, opposite to Tenderbar, and almost four hours' walk from it. Thus high it is navigable, but beyond is of no service, for although canoes can proceed further up to Soongahdoo, and beyond that to Pahcow, yet the stream is so inconsiderable and winding that the natives prefer travelling by land. It is also, in this distance, fordable in many parts; and even not much above Badjecoondah it is so narrow that the natives pass over it on a plank.

'This positively known direction of the Badjecoondah towards Tenderbar does not agree with the old charts, and consequently is an insurmountable argument against their correctness, as is also, in great measure, the equally known fact of the diminutiveness of the stream above Badjecoondah, which, on that account, could not well be imagined to pass through the extent of country necessary to connect it with the Casamanza; and even admitting that it was, it could by no means constitute the Casamanza to be a branch of the Gambia.

'Were there a junction, by any other channel than those hitherto

entered in the old charts, between the rivers Gambia and Casamanza, it is impossible that it could be withheld from general publicity, for it would be too valuable to remain unknown, or be disused. And any one who visits this part of Africa would feel convinced that no creek, that could in any way be turned to account, would be overlooked by the small French coasting vessels, which, in search of shell-lime, penetrate the most obscure drains accessible at the highest floods, and continually present to the passing strangers a mast arising above what would appear to be an impenetrable thicket.

'After all, even allowing that a junction was proved, or, indeed, that the Casamanza was actually a branch of the Gambia, there yet remains a fact, altogether unnoticed, in the late Lieutenant-Colonel Lumley's letter on the subject. The Portuguese have been established for centuries on the south bank of the river, and consider it indisputably to be their own.'

(Signed) 'THOMAS BOTELER,
'Commander of H.M. Sloop Hecla.'

Extract of a Despatch from Lieutenant-Governor Rendall, dated Bathurst, River Gambia, June 30, 1831.

'I availed myself of the offer made to me by one of the merchants of the settlement (Mr. Chown), to proceed in his vessel to the Vintain river, and having understood that opposition would be made to our passage, I took with me Ensign Fearon, and a small party of men. Messrs. Grant and Bocock, also, kindly offered their assistance, and the latter brought with him two of his vessels, in order to make a better appearance.

'On the 7th of June I reached the town of Vintain, and having in vain endeavoured to procure an interview with the Alcaide, I gave him notice of my intention, and proceeded up the Jataban branch (being supposed to be the largest), and on the 9th arrived at Gifarang, a distance of about forty miles, where the pilots refused to take the large vessels any further.

'The King of Jataban had heard of my approach, and on the the 10th held a grand palaver of the chiefs and people of his country, during which he declared his great satisfaction at seeing white men, and complained of the injustice of the Alcaide of Vintain, who had so long kept the mouth of the river closed against the traders; that he hoped I would now keep it open, and as he had the real right of the river he gave it to me for that purpose.

'Being anxious to discover the communication between this river and the Casamanza, I started the next morning at day-light in one of the boats, and found that there was water enough for small craft as high as Badjacoonda, twenty miles above Gifarang,

where I met the small vessel I had sent on for the purpose of going as high as it could; but the master, believing the reports of the natives, that it would be dangerous for him to attempt passing some rocks just above, had anchored there. We, however, continued our route in the boat, sounding the whole way, and always finding a channel of two fathoms, for more than five miles, when the banks gradually grew narrower, with mangroves on each side, until at last they impeded the action of the oars.

'The channel being still very deep we persisted for some time, and I was at last compelled to return, without discovering the junction of this river with the Casamanza, although more persuaded than ever of its existence. The prevalence of the tornadoes and rains, and the impossibility of keeping those gentlemen's vessels from their trade, prevented me from making another attempt at that time; but I hope, hereafter, to have an opportunity of exploring all the creeks of this valuable branch of the river Gambia, the mouths of ten of which we passed, going up and down; and although most of them are very wide at their entrances, the pilots could not tell us where they terminated. Some they had been up a considerable distance in canoes, and others they had never attempted.

'On the 14th of June I returned to the town of Vintain, and after a very angry conference, the Alcaide submitted entirely to my wishes; and then declared that he had been obliged to make his show of resistance before his people, otherwise they would have said he had sold me the country.'

Mr. Rendall concludes by stating that 'his views of advantage to the general trade of the river, by this voyage, have been amply realized, eight or nine vessels having ever since been employed trading backwards and forwards from this settlement to the ports of Gifarang and Badjacoonda. Some of the most experienced of the traders have declared the opening of this river to be the most fortunate event that has happened since the establishment of this settlement, as it must be the means, hereafter, of cutting off a great portion of the trade to Casamanza, Cacheo, and Bissao, and at once enable them to trade direct with the Jollas, whose wax is perfectly pure, and who have had hitherto no outlet for half their produce.'

Should any further information be obtained in regard to the supposed junction of the Gambia and the Casamanza, it will be communicated to the Geographical Society.

V.—*Observations on the Gulf of Arta, made in* 1830. Communicated by Lieut. James Wolfe, R.N. Read, 24th Dec. 1832.

The Gulf of Arta (the ancient Ambracius Sinus*) is an inlet of the Ionian sea, bounded by the provinces of Epirus and Acarnania. Its extreme length, which lies E. and W., is about twenty-five miles, and breadth about ten miles.

The entrance is narrow. Between a bastion of the walls of Prevesa and the opposite low point on which stands fort La Punta, it is only seven hundred yards across; outside of this is a bar composed of gravel, coarse sand, and sea-weed, not having more than fifteen feet water on it in the shoalest part of the channel. The northern shore has an elevation of about sixty feet, is tolerably level and covered with olive woods, while to the southward the land would appear, from its barrenness, flatness, and the swampy and saline nature of its soil, to have been gained from the sea; though we find from Polybius, that at the time of Philip, the breadth of the entrance was only five stadia, or half a mile, which is still the average distance between the two shores, notwithstanding the two points beforementioned may approach somewhat nearer.

The entrance lies about N.N.E.; then, turning abruptly round a low point, on which is a small redoubt of earth, it continues in a south-easterly direction of greater width for about four miles; this may be termed the Bay of Prevesa. Between Capes La Scara and Madonna, which are high and form a sort of second entrance to the gulf, the width decreases to one mile and a half, and then expands into a large basin, whose general features are these—the southern and eastern shores are high and bold; the northern low and swampy, with large lakes only separated from the gulf by narrow ribbons of sand, occasionally dipping below the surface, and not rising to more than one and a half or two feet above.

On the northern shore of the entrance is situated the modern town of Prevesa, irregularly built in the Turkish style. Towards the land it is defended by a wall and ditch, the numerous winged lions of St. Mark on the former bespeaking them to be of Venetian construction. Towards the harbour it is open to the beach; but within the walls are two forts, St. George and Nuovo, the latter commanding the approach from the gulf, the former from the sea. This is again further defended by another strong fort built by Ali Pasha, called Pantokratera, situated on an outer point about a quarter of a mile from the town. These, with Fort la Punta and the redoubt beforementioned, constitute all the defences of the place.

* [In regard to the ancient names in this paper, it is necessary to remark, that all, not even excepting Ambracia (probably the least doubtful of them), have been, and still are, contested. They are only to be considered, therefore, as indicating the opinion of the writer on these questions in ancient geography.]

Prevesa is governed by a Bey under the Pashalik of Yanina; and contains about six or seven thousand inhabitants, of whom the greater part are Greeks, the Turkish portion consisting principally of the military and civil servants of the government. There are no manufactures, and the few small shops scattered through the town prove the paucity of trade. The town is abundantly supplied with water by springs, and possesses every requisite for emerging from its present miserable condition. The market is but indifferently supplied with vegetables or fruit, the vicinity of Prevesa being devoted to the cultivation of the olive, which is the principal produce of the country, though valonia, bullocks, firewood, and occasionally corn, find a market at the Ionian islands.

It is not a little amusing to observe the incongruous mixture of the modern and antique in Prevesa: fragments of Roman architraves form the corner stones and principal support of small houses, while balconies owe their uncertain station to frail colonnades, where bases, shafts, and capitals of all orders afforded by the ruins of Nicopolis, are thrown together in whimsical confusion.

There is but one mosque in the town adorned with a similar colonnade to that above described, and one Greek church, a remnant of the Venetians. The dial of a clock still remains on the steeple, although the works and hands have long since disappeared. The European consuls for Albania generally reside at Prevesa.

About half a mile beyond Prevesa is a small estuary called Vathee, a name it has obtained from the depth of water, qualifying it admirably for a dockyard. On its northern shores are some substantial, though not extensive Roman ruins, apparently coeval and probably connected with Nicopolis. The masses are in too confused a state, and too much overgrown with weeds and shrubs, to define any particular form of building, though, from their solidity, they were doubtless of a public nature. They are now called Margaroni.

From this the shore takes a direction to the S.S.E., the beach being at first low with clay cliffs; and it is remarkable that almost every valley has a lake of salt water in it. The district name is Skaffidakki; it is well cultivated, and the soil abundantly fertile, irrigated with numerous little streams. Towards the termination of this tongue, where a double peak mount rises to the height of one hundred and fifty feet, the shore is abrupt and rocky; but, on again ascending to the northward, it soon changes its nature to clay cliffs, at the foot of which runs a narrow beach on which are agates and rounded pebbles of jasper and quartz. These cliffs are from fifteen to twenty feet in height; and at the foot of one near the convent of the Holy Apostles, I observed a thin stratum of slaty coal just showing itself above the beach. It did not possess the lustre of our coal; but, though difficult of ignition, it burnt well, and I was

informed by General Pisa, commandant of Vonitza, that the mountains of Acarnania produce coal and sulphur in abundance. In many places also the rocks indicate the presence of copper. The two Greek convents of Holy Trinity and the Holy Apostles, on this coast, are the only buildings for miles; they are the resort of the Greeks from all parts of the gulf on their numerous festas, and are supposed to be rich; of which, however, they make no show, fearful of the grasping hand of Ottoman power.

Passing these we come to the low flat coast which, with two or three exceptions, prevails along all the northern shores of the gulf. At the head of this bight, which, from its proximity to the ruins, I have termed Nicopolis Bay, is the Lake Mazoma, about a mile long and half a mile wide, separated only by a very narrow ribbon of sand from the gulf, and of which, if we suppose this lake once to have been a portion of it, the distance across to the sea would be here little more than a mile, the walls of the Acropolis being also washed by it. At this spot we saw a party of Sicilians fishing for sardinias, which they salted down in barrels from their nets. They appeared to be very successful, and were under the protection of the Greek gunboats, for which they paid a tithe of the produce of their labour. They visit the gulf annually in large speronaros for this purpose.

The termination of a low range of hills, stretching eastward across to the sea, now gives a little elevation to the coast line for about a mile and a half, when we arrive at the mouth of the river Luro, (the ancient Charadra,) which is about sixty feet wide. Although obstructed by shallow water, yet vessels drawing ten to twelve feet water may enter, and from the uniformity of its breadth and depth it is more navigable, and deserves to be ranked higher than the Arta. At the entrance, its eastern bank affords about one hundred square feet of *terra firma*, occupied by a Greek guard; but the western bank is defined only by rushes, and for two miles up the river I could only find two places to effect a landing. The velocity of the stream was about two miles an hour. I crossed the Lure at a ferry about seven miles higher up, which is on the road from Prevesa to Arta, where it is as broad, deep, and rapid as at the entrance. Two or three miles above this it divides into two streams, one coming from the northward, the other from a more easterly direction, and passing the ruins of the ancient Charadrum, where its width is only forty feet, and the velocity of the current three miles an hour. This branch is now called Hippolytos, though it evidently is the main branch, and comparing the ancient name of the river with the fortress abovementioned standing on its banks, was certainly always considered so. It appears to take its rise to the eastward of Mavro Vounó, (or Black Mountain,) a very remarkable three-peaked mountain of about fifteen hundred feet

in height, whose sombre and barren aspect sanctions the name given to it. This is the highest of a range running nearly E. and W. the whole length of the gulf, about eight or nine miles from its shores, at the base of which lie the rich and fertile plains of Arta.

Returning to the coast, we find from the Luro an irregular line of low sandy shore, first to the S.E., then easterly to Salahora, inclosing the large lake Chukaleo. Salahora is a rocky elevation of about two hundred feet, remarkable for its isolated position on these half-formed shores. It is a Turkish post, with a guard of fifty Albanian soldiers; there are also some small pieces of cannon, but I cannot venture to say the place is fortified, as they appear there more by chance than design; the summit of the hill, however, admits of being rendered a strong hold. A custom-house is established here, as this is the line most preferred for the conveyance of passengers and merchandise to Arta, whence it is distant only three hours and a half by a good road. From Prevesa even it is more common to embark for Salahora, than make the whole journey by land.

A very narrow ribbon of three miles connects Salahora with another similar elevation lying to the E.S.E., where is a Greek post and village containing two hundred souls, of whom forty are soldiers; the rest consist of Greek fishermen and their families. It is the only place on the shores of the gulf, with the exception of Prevesa or Vonitza, where supplies can be obtained. The summit is crowned by a Venetian convent, now converted into a Greek church. I observed several fragments of sculptured marble, but the inhabitants were ignorant of the means of their being there, and I could not discover any ruins of higher antiquity than the Venetians. Here and at Salahora a commanding view is obtained of the extensive lakes lying at the foot of these eminences; they are very shallow and interspersed with numerous swampy islands. Vuvala, and the small islands lying to the southward (which are all high), appear more properly to be exclusively meant by the name Korako Nissi (or Crow Islands), and the fact of the spot where stands the village being included in the same appellation, would argue that it formerly did not even possess the small claim which it now has to belong to the main-land, and I need only refer to the chart to show the probability of their all becoming united. They are inclosed in a shoal of one to two fathoms extending from the shore, and two of them are already connected by a bank, over which the sea only washes in strong sea-breezes. The island of Vuvala itself is thus formed of four islets, connected by strips of sand inclosing a lake; and to the large elevation where the village stands two similar islets have been added, also inclosing a lake. All these elevations are of soft sand-

stone, presenting cliffs of fifteen to thirty feet in height, in which are veins of decomposed jasper, and those on the main-land of red marl, differing in formation from Salahora, which is of limestone and quartz.

The same low shore again obtains beyond Korako Nissi, trending to the N.E. but now perhaps less firm than to the westward, till we come to the old mouth of the river Arta, now called Palea Buca. Long flats of stiff black mud and weeds render the coast no longer definable, nor to be approached even in a canoe. A sandy spit stretches out to the southward, at the extremity of which patches of rushes appear like islands, and rounding these, we arrive at the present mouth of the Arta, the ancient Aracthus, so obstructed by swamps and shoals as scarcely to be accessible even to boats; but on crossing this bar we find sixteen or seventeen feet, and rarely less than ten in the channel, for a distance of six miles up the river. At the entrance, its width is about sixty yards, but soon becomes much more narrow; the banks are alternately cliffy and low, as the tortuosity of the river shoots off the velocity of the current, thus,



Having past the sandy flats at the mouth, the banks exhibit a rich alluvium, but from the thinness of population they are not well cultivated. The corn which we found standing was full-eared, luxuriant, and fit for cutting at the latter end of June; at Arta, indeed, the harvest had already commenced. About six miles up the river, though only one and a half in a direct line, a quarter of a mile from the eastern bank lies the village of Kumano, consisting of about eighty huts, very prettily situated among fruit trees, with its vicinity well cultivated. The current was running about one mile and a half an hour; the banks, which are about ten feet high, are completely honeycombed by the swallows, who build their nests in them. Mulberry trees, both red and white, and the liquorice plant, are very abundant.

Three miles higher up, but on the western bank, is the village of Neo Chori (or new village), on a more diminutive scale than Kumano. The river here becomes shallow, not having more than five feet in the deepest part, and greatly obstructed by shoals. It takes a very circuitous direction to the N.E., but returns to the village of Pachi Kalamo, also on the western bank, and lying about two miles to the northward of Neo Chori. Here the river is not above twenty yards across, inclosed between banks fifteen feet in height, and only navigable for canoes.

Hence we took horse to the city of Arta, distant about five miles, by a road occasionally leading us near the river, which appeared cut up by small islands. We crossed several tributary streams, serving to turn mills, water being preferred for this purpose to wind. Except in the immediate vicinity of villages, we saw but little cultivation, and the greater part of the vast plains of Arta appears devoted to pasture. Large herds of sheep and cattle may frequently be met with, among which are also buffaloes, which are eaten as well as bullocks.

For the last half hour previous to reaching Arta, our road lay over a beautiful country, through a delightful avenue of wild shrubs, amongst which the myrtle and jessamine prevailed, whose aromatic fragrance rendered the calm freshness of a summer's evening still more enchanting.

At Arta the bed of the river is about two hundred yards across; the stream, however, at this season, was divided by sandbanks into small rivulets, shallow but rapid, running at least four miles an hour. Above the town it appears comparatively diminutive, and five or six miles above the town is lost among the hills. Cramer gives its source in the range of Pindus, thirty miles to the northward, a distance which is not warranted by its appearance, nor by the information I obtained at the city. The bridge over the river at Arta is of singular construction—it is, I believe, Venetian. The centre arch has a span of about eighty feet, on either side of which are three smaller ones of not more than thirty feet span, and between these again there are narrow elongated arches. Instead of the bridge being one uniform curve, it is formed of three obtuse angles, one in the centre and one on each side, thus,



making the passage across both difficult and dangerous, while a low parapet of about two feet affords but little security from a fall of at least one hundred feet into the stream below.

Here, on the eastern bank of the river, is situated the town of Arta, the ancient Ambracia. It is distant seven miles from the shores of the gulf, to which it now, as formerly, gives name. Traces of the ancient walls may be seen in many places, but more particularly where they form the base of part of the wall of the present castle or citadel, close to the banks of the river. They differ from any other ruins of the gulf; the stones being regular oblong quadrangular blocks, with a smooth surface, placed horizontally, and so very closely fitted, that it is with difficulty a penknife could be anywhere inserted, though no mortar or cement appears to have been used in the construction. The style, I be-

lieve, is known as the Hellenic. At Melos there are extensive ruins of this nature. The size of the stones is immense; I measured one eighteen feet by five, and the greater number nearly approached these dimensions. These walls may be traced a considerable distance, apparently inclosing the elevated ground to the eastward of the town. There are no other remains of coeval date, either temple, theatre, or other building.

The next object worthy of notice is the ruin of a convent built by the Empress Theodosia, about the year 845 of the Christian era. The architecture is of the Lower Empire; it is subdivided into numerous cells, and perforated with small windows in the Gothic style. The walls are alternate layers of stones for about two feet, then the small flat red Roman brick for about six feet. It now affords free lodging for the caravans of horses bringing merchandise and their drivers. There is also a large Greek cathedral, built after the same style, but of a more modern date, and of an octagonal form. During the late war, it was converted into a fortress by the Albanians, who, by blocking up the windows, rendered it a position very tenable and strong.

Like other towns of this devoted country, Arta has suffered greatly from the recent dreadful struggle. In many places masses of ruins entirely impede the passage of the streets, and an aspect of desolation and misery now hangs over this large and once populous and flourishing city. It is difficult to judge of its present population, as from the disturbed state of the country, and the constant demand for troops by the Pasha, it must fluctuate greatly; add to which, the majority of the inhabitants are both soldiers and citizens (the former perhaps by preference), and always sufficiently stimulated by the hopes of plunder to engage in any quarrel, foreign or domestic. The contending factions in Albania had then withdrawn to Yanina (the scene of strife) nearly all but the peaceful Greek artizans, leaving only about five hundred troops to garrison the castle. The population of Arta may however be stated at seven thousand as a maximum.

Arta, like Prevesa, is governed by a Bey under the Pashalik of Yanina; and as the entrepôt between this place and the gulf, it derives some commercial benefit. There are manufactures in it of coarse cottons and woollens; the floccatas (or capotes) are considered the best, and the leather, though of an inferior description, is very strong: the stench arising from the tan-yards along the river is intolerable. Embroidery is brought to great perfection, and all articles of dress from Arta are highly prized. The northern part of the town around the castle is inhabited solely by Turks, who have a national custom, arising from jealousy of their women, of excluding all Franks from the quarter set apart for themselves. Each trade has its separate street or bazaar, but

butchers are obliged to kill and sell their meat outside the town. The market is abundantly supplied with fruit and vegetables.

There can be no doubt that Arta occupies the site of the ancient Ambracia, but the position of Ambracus has not been clearly settled, and some travellers have endeavoured to overcome the difficulty by confounding it with Ambracia. Polybius, describing it as a fortress of considerable strength, distinctly says, Philip was desirous 'first to gain Ambracus, and *thence* to make his attacks upon Ambracia.' It was situated in a marsh, for Philip had to raise causeways, there having been previously only one by which the place could be approached. Near the western shore of the old mouth of the Arta are some ruins, whose topographical situation will accord with the above description, being on a swampy island, in a marshy lake near the gulf, whose shores however I could not approach in a boat, by reason of the shallowness of the water. I got no nearer than half a mile, whence I could perceive the walls tolerably perfect, to the height of twenty-five or thirty feet. They inclosed an area of about a quarter of a mile in extent, and appeared to be merely a military post, which was all the swampy nature of the ground would admit of. Scylax says 'Ambracia was eight miles (eighty stadia) from the sea,' and observes, 'it had a fort close to the shore, and a most beautiful 'harbour.' This is fully identified with the locality under consideration, and though Scylax does not mention this fort as Ambracus, we have every reason to believe it to be the same, defending the entrance to the river, and distant from the city six miles. These remains have no other modern name than Paleo Kastro, which is a sort of generic term for all ruins from twenty to two thousand years antiquity, meaning simply old castle.

Four miles east of the mouth of the Arta, we arrive at the N.E. angle of the gulf, where terminates the low swampy land; and, turning suddenly to the southward, the coast becomes rocky and high, rising abruptly to the Makronoro ridge, an elevation of four hundred and fifty to five hundred feet. At the northern extremity of this ridge, overlooking the plains of Arta, are some walls of Cyclopean masonry, inclosing an extensive area. They are now called Palea Kulia, and were occupied by a strong body of Greek troops, who already considered this spot as the frontier of their country. The ascent from the plains is steep and rugged, and here commence a series of military passes as far as Karavasara, commanding the high road from Albania to Greece, which leads over this ridge.

This character of coast obtains along the eastern shore, with the exception of a portion called Mount Armyros, which appears to have been originally isolated, and is now only connected with the main by swamps; off it the water is shoal for a quarter of a mile.

Passing this we enter the bay of Karavasara, which is about two miles deep; both shores are high, and on the eastern side may be seen the ruins of Olpæ, exactly as described by Thucydides, situated on an eminence on the sea-shore, twenty-five stadia (two miles and a half) from Argos. I did not visit the spot, but in passing could plainly discern portions of the walls.

About a mile to the N.E. of Olpæ, across the valley of Argatha, are some extensive ruins, probably the town of Metropolis, merely mentioned by Thucydides. I did not visit these remains, but they are described by a companion as being Cyclopæan, but not so extensive or perfect as those of Argos.

At the bottom of Karavasara bay, are the ruins of Argos Amphilochicum, built after the Trojan war. They are very extensive, and situated on a steep acclivity, the top of which appears to have been occupied by the town, encircled by walls, tangented by two others descending the hill, and meeting at an angle within a few feet of the sea; they are of Cyclopean masonry, and the stones generally very large. There are no traces of any public buildings, and the only object to be noticed is a spot pointed out by our guide, where the reverberation of a stone thrown, or a person jumping, may be heard below, as over a sheet of water with a thin crust of ice and an extensive vacuum beneath.

Ali Pasha endeavoured to establish a modern town on the site of Argos, the ruins of which, with those of ancient date, are curiously blended. He compelled families to locate, but on his death they all returned to their native places; nor is it to be wondered at, considering the uninviting position of their new settlement, whose only advantage is its strength as a military post, the road winding between its walls and the sea-shore, and passing through a deep ravine to the westward. This is commanded by the town, which is inaccessible on this side.

Ali Pasha had employed his troops in excavating among the ruins, but without success; having heard of the good fortune of a person at Ithaca, he hoped to obtain either from the virtuoso or the Jew wherewithal to recompense him.

Karavasara, which is the modern name of a custom-house and a few huts near the ruins, is at present only occupied by a captain's guard, the main body of Greek troops being, as I before mentioned, at Palea Kulia, distant eleven miles. Livy gives the distance between Argos and Ambracia one hundred and eighty stadia (eighteen miles), which is very correct.

The summit of the hill on which Argos is situated is about three hundred and fifty feet high, whence to the southward may be discovered an inland lake of considerable size; but no river finds its way through the valley into the gulf, water at Karavasara being obtained from wells. To the eastward the land rises abruptly to

a range of fifteen hundred feet in height, (lying about N.N.E. and S.S.W. true,) on which are the two peaks of Idomenee. The country here is covered with forests of oak, which yield the valonia, an acorn used in dyeing, and an article of considerable traffic. On the lower hills, between the masses of limestone rock, grows a thick underwood of briers, relieved however by the beauty and fragrance of the myrtle, which is very abundant and luxuriant all over the gulf.

From the bay of Karavasara, which is the S.E. extremity of the gulf, the shore runs in an irregular line to the westward, forming small bays; at the bottom of one called Palipai is the little land-locked port of Loutraki, celebrated by Lord Byron for the beauty of its scenery.

How brown the foliage of the green hills' grove,
Nodding at midnight o'er the calm bay's rest,
As winds come lightly whispering from the west,
Kissing, not ruffling, the blue deep's serene.

In the bay of Ruga, next to the former, we discovered the ruins of Cyclopean walls, which most probably are those of Limnæa, where, according to Polybius (v. 5.), Philip disembarked his troops after the siege of Ambracus. They are situated on a small plain, about half a mile in extent, which they inclose, bordering closely to the southward on the shores of a lake; and from this probably the town takes its name. Toward the sea I could not trace any remains of the walls, nor any ruins within the area, which was flat as a meadow, and overgrown with long grass. The walls are fifteen feet in thickness, but do not in any place rise higher than eight feet, and are thus so hidden among trees as easily to escape the eye. They were a matter of wonder to our pilot, who, though an old fisherman in the gulf, was not aware of their existence.

Coasting along a shore generally steep and rocky, and passing Point Viatava, we enter the bay of Vonitza, which is free from dangers, and the anchorage good; a mile off the town there is twelve to fourteen fathoms, with a muddy bottom, shoaling gradually to the shore. From Cape Madonna to Point Viatava is two miles and a quarter, and the depth is one mile and three-quarters. At the bottom of this bay lies the town of Vonitza, backed by a rich and well-cultivated valley, between Mounts Amuthero and Ouranissi. At present the town consists only of a few ill-built huts along the sea-shore, at the foot of a small isolated hill, about three hundred feet in height, whose foot is washed by the sea to the northward, and to the south-westward by a lagoon, a mile in extent, capable of receiving mysticoes, or gunboats, but having too little water for vessels of burden.

On this hill stands the citadel, originally of Venetian construction, and the ravages of time and war have been but imperfectly

repaired by their successors, the Turks and Greeks; though, without any pretensions to regularity or science, it may have been considered strong, while yet heavy battering trains were unknown. The plan of its construction has been to inclose the summit of the hill with two concentric walls in the form of an ellipse, each end of which is again strengthened by a bastion, and the hill, which is steep and rugged, is bisected N. and S., by a wall from the sea on one side, to the lake on the other. Its apex is crowned by a church, now more appropriately used as a guardhouse for the troops on duty in the fort, where also excellent barracks have been erected by the Greeks. This station commands the entire view of the entrance and approach to the gulf. The citadel possesses the great advantage of an abundant supply of good water, from springs at and near the summit of the hill, and although it may be commanded by artillery, it is only from heights very difficult of access, and not nearer than two miles. The best point of attack is from the N.W., on the southern shores of the little port San Marco, whence it was assailed by the Greeks under General Church, but it was from starvation only that the Turks were obliged to yield, the Greeks having possession of the surrounding country, and their gunboats riding triumphant on the waters of the gulf.

The plain of Vonitza, which is the only arable land of any extent on this side the gulf, is about two miles in breadth, and runs back to a range of well-wooded hills, at whose foot the scenery is so beautiful as to have obtained for it the name of Paradise. Here a stream takes its rise, which, winding round the base of Mount Ouranissi, runs through the town of Vonitza into the sea, and is at all times sufficient for the supply of a much larger population than it now boasts of, as well as all vessels navigating the gulf. During the winter, when swelled by tributary streams, it is of considerable size, and runs with great rapidity, so as only to be fordable at few places. The banks are lined with oriental plane-trees, whose rich and umbrageous foliage, while it serves to maintain the refreshing temperature of the stream, forms a cool and picturesque retreat from the scorching rays of a summer's sun. Other small streams irrigate this valley, which is capable of high improvement, but the uncertain tenure of Acarnania by the Greeks causes a reluctance to risk labour and capital either in town or country.

Vonitza itself, when we visited it, was in ruins; scarcely a house was habitable; even the authorities preferred small temporary huts of straw to grovelling among the ruins of what never was a superb town, and where the poorer classes now find a retreat. General Pisa, an Italian by birth, but a cosmopolite by circumstances, commanded the district and fort, but he was generally absent at Missolonghi. He, of course, was a great advocate for

the gulf as a frontier, to be continued across to Zeitouni, which admitted of the best defence from northern invasion. The whole population does not exceed three thousand, of whom eight hundred are military. Their dress has been most absurdly changed from the picturesque Albanian to a clumsy imitation of the Frank uniform. They have no manufactures, and but little commerce, except their market supplies.

About a mile from the coast, on the eastern side of the plain, is a square mound about eighty feet in height, with a flat surface, bearing every appearance of being artificial, but on examination I could not discover any large stones or other traces of ancient remains.

The little port San Marco, in the bay of Vonitza, has capabilities for a dockyard, as the water is so deep that large ships might lie close to the shore. At the head of this port is a narrow isthmus, nearly insulating the tongue of land terminated by Cape Madonna, which forms the western shore of Vonitza Bay. This tongue has an elevation of about two hundred and fifty feet, and is probably the site of the temple of the Actian Apollo, speaking of which Strabo says, (book vii. chap. 8.) 'On entering this gulf, we 'find to the right the Acarnanians, a Grecian people, and the 'temple of Apollo. This temple is situated *near* the entrance, *on* '*a hill*, at the foot of which are a sacred grove and docks, where 'Augustus kept ten of the vessels taken from the enemy, from one 'row of oars to ten.' And again (book x. chap. 3.) he says, 'Leaving the opening of the Ambracian Gulf we find, first, a place 'belonging to the Acarnanians; it is that which is called Actium, 'and this name is common as well to the temple of the Actian 'Apollo as to the cape which marks the opening of the gulf, and 'forms a port within.' No traces of the ruins of Actium having yet been discovered, its position is a subject of uncertainty; but I cannot help differing decidedly from those who would place it on the low land opposite Prevesa. For although Strabo says it was *near* the entrance, yet the fact of its having stood on an eminence, in my opinion entirely precludes the possibility of its having been situated on Point la Punta, where the land, for some distance from the shore, is so low and swampy that it is unfit for habitation, and continues very flat for three miles to the southward before it begins to rise.

Westward of the promontory which bears the district name of Azio, the hills and cliffs continue for about a mile close to the shore, before the low land branches off; and I am not prepared to deny that Actium might have stood at the bottom of the bay of Prevesa, which however appears not always to have been considered part of the gulf, Scylax distinctly calling it the bay of Anactorium.

Of the position of this latter town (Anactorium) we are equally uncertain. We learn from Strabo that 'at forty stadia from the 'temple (of Actium) is Anactorium, situated on the gulf.' (Book x. chap. 3.) Then in the second chapter of the same book he says,—'As to the towns of the two countries, of those of the Acar-'nanians the first is Anactorium, which is inclosed in a peninsula 'not far from Actium, and serves as an entrepôt of commerce to 'Nicopolis.' This latter remark favours its having stood on Point La Punta, which will also agree with the distance of four miles (forty stadia) between it and our assumed position of Actium. Pouqueville, however, has taken it in the opposite direction, and supposes Vonitza to occupy the site of Anactorium. The peninsular position given it by Strabo may be accounted for by the indentation of Port Demata, supposing the bottom of the bay of Prevesa not to have been so much filled up as at present. Here also must have been the peninsula of Dioscyrium, across which Philip had his vessels carried from Leucas.

The ruins on Point La Punta are but small, and appear to be of very modern date.

Westward of Vonitza there is now no habitation, except an occasional solitary hut, and the land, where high, is so overgrown with thick underwood as to be almost impassable.

From La Punta the coast trends southward, continuing low to Port Demata, which is an excellent harbour for small vessels, and on its southern shore rises Mount Teki, round whose base flows the narrow channel that insulates Santa Maura.

Three miles to the northward of Prevesa, on a low isthmus separating the sea from the gulf, lie the ruins of the Roman town of Nicopolis, founded by Augustus in honour of the victory of Actium, about thirty years before the Christian æra. The plain is bounded to the northward by a low range of hills, at the foot of which stands the great theatre, the most conspicuous object of the ruins: it is in a tolerably good state of preservation, some of the highest arches at the back of the building still standing; the front has principally suffered. There are three grand entrance doors and a smaller one on each side, probably leading to the cells of the wild beasts. The length of the area is one hundred and fourteen feet, the height of the building is ninety-seven feet, but, being built on a steep ascent, the back part is only thirty feet. There are twenty-seven rows of seats in three divisions, which have each their separate *entrées* by two doorways not immediately over each other. The building is of a semicircular form; the direction of the front about N.W. magnetic, and with the exception of the angles being of stone, it is all of a red brick larger than those generally used. The area and seats were overgrown with shrubs, weeds, and long grass. The stucco in the archways is so exceedingly hard, that a

penknife will scarcely mark it. I could not discover any inscription either on this or any other of these ruins, nor did they ever boast of much architectural ornament.

About a quarter of a mile to the westward, so much overgrown with verdure as almost to escape notice, I observed a perfect elliptical building about five hundred feet in length, and one hundred and fifty broad. It did not appear to be above fifteen feet in height, though of course it is difficult to judge what the level of the ground originally was. There were rows of seats like a theatre, but the whole of the interior was so concealed in rank vegetation as to render minute description impossible. It lies in the same direction as the front of the amphitheatre, and has an entrance by three doors at its western extreme. It appears to be a gymnasium, and is most probably where the Actian games were celebrated.

These two buildings are separated from the chief body of the ruins, which are about half a mile to the southward, and consist first of an irregular pentagonal inclosure, the walls of which are of stone, with square towers at intervals not above twenty-five feet in height. The extent of the inclosure, which appears to have been the Acropolis, is about a quarter of a mile, and the eastern angle of the wall reaches to the shores of Lake Mazoma.

Three hundred yards westward are the remains of a very pretty theatre but little dilapidated; it is small, the diameter not exceeding sixty feet, and built entirely of stone; an inclined plane in the rear of the building leads to the upper seats under an archway. The lower part of the wall is constructed of arches, leaving a promenade underneath, and within this again is another arched passage, so that the seats of the theatre are upon descending arches.

Between this and the shore is a temple; it is a quadrangular building of brick, with an area of fifty feet by thirty. A singularity in its construction is the double walls with a passage of three feet between them all round the building. There were niches in the walls for statues, but I did not see any columns. At the western entrance are two round towers resembling Martello towers, but not so high. The aqueduct terminates here, which, taking a northerly direction along the sea-shore, may be traced beyond the first range of hills, and is perfect in a valley on the road to Kamarina, about twelve miles distant. At Nicopolis it is in so ruinous a state, that only in one place are two arches to be seen together.

Not even a village now occupies the site of a city which Augustus fondly hoped would be a lasting memorial of his exploits, and for whose aggrandisement he despoiled so many of the neighbouring towns. Having fallen into decay, it was restored by the Emperor Julian; but reasons for locating are so different in modern times from what they were, that we find few of the sites of ancient towns now occupied by modern ones. Nicopolis now

only affords an asylum for a few shepherds whose flocks graze among its ruins.

To the northward of Nicopolis the land rises to a sharp ridge about fifteen hundred feet in height, which is crowned by a wall of Cyclopean masonry running along it for three or four miles, and appearing more like the boundary of a district than a town. At the western extreme, which descends abruptly to the coast, there is a bastion one hundred and fifty feet in length and eighty in breadth, which descends abruptly by a rugged path to the sea-shore. From this spot a fine view is obtained of the Ionian Sea, with the islands of Corfù, Anti-Paxo, Paxo, and Santa Maura, and the mountainous and picturesque country of Suli to the northward; while immediately beneath, in the calm sleep of natural decay, lie the perfect ruins of an ancient city, about two hundred feet below the summit of the ridge. About the centre of the town in a little ravine stands the theatre; the radius is about eighty feet, describing only a third of a circle. There were forty-eight rows of seats; and as the soil is not favourable to vegetable growth, it is more free from weeds than ruins are generally found. In the area lay a portion of rock weighing about forty tons, which time, or some other convulsion, had dislodged from the cliff above, and which, in its descent, has destroyed the wall and seats; at another place the external wall sustained a similar piece, though of smaller dimensions. The entrance doors, the steps, the walls, in short the whole building is in excellent preservation: but in a still better state did we find a bath about two hundred yards to the S.W. of the theatre. A doorway had been cleared, and we entered an arched passage twenty feet long and five wide, which led to the bath itself, about nine feet square and twelve high, with an arched top. A small square hole had been originally left for the admission of light and air, but as this was closed by the external increase of soil, one of the upper stones in the roof had been removed for the abovementioned purposes. The stucco was hard as stone, fresh and uncoloured; the sole ornament was a sort of square panelling with a neat moulding above and below; the whole was light and elegant. The stones used in its construction were of large dimensions, the arch of the doorway into the bath was of one piece. Both passage and bath were partly filled with light rubbish, but an hour's labour would restore the whole nearly to its original state.

This bath stood near one of the gates of the town, which was so small and narrow that it would scarcely admit the passage of a horseman. It was remarkable from being formed of only two stones placed upright and meeting in the centre, each of them forming half the arch, thus:—



The walls are about twelve feet thick, in good preservation, and the direction of many buildings may be traced, one of which we imagined to be a temple, where several pieces of column of common limestone protruded through the soil. These ruins are termed by the natives Pu-ul, but I will not venture to assign an ancient name to them, not being able to discover any description that will accord with their remarkable position. The inhabitants are only aware of one visit made to the ruins, about ten years since, by two Englishmen, who excavated some tombs between this and the village of Kamarina, which lies about a mile from the ruins lower down the mountain, where any traveller may experience the hospitality of an Albanian chief, surrounded by his feudal retainers. This village is but one day from Prevesa, and the ruins, which are not generally known to exist, are well worth the attention of travellers having a little leisure time. The vicinity of the village is well cultivated, but the vegetation was at least a fortnight behind. The name of the mountain is Zalunga, and the district extending towards Nicopolis is termed Lamari. We found a sensible difference of temperature, the thermometer standing 8° or 10° lower than in the plains.

At Kamarina we saw a piece of ornamented marble on which might be faintly traced part of a Roman inscription ; it was brought from Kastro Sikia, a village near the sea, where we were told might be seen other remains of antiquity. This place, or in the vicinity, was most probably the Portus Comarus described by Strabo, for off Papalaka Point there is the appearance of an ancient mole. The other port mentioned by Strabo as being more commodious, and situated twelve stadia from Nicopolis, is doubtless the present village of Mitika, and the name of Gomaros Bay, given to the indentation between Mitika and Kastro Sikia, appears to be a corruption of the ancient name Comarus.

Seven miles to the westward of Arta, on the road to Prevesa, is the hamlet of Imaum Chiaus ; and about half a mile to the N.W. of this, crossing the Hippolytos, are the ruins of Charadrum, now known by the name of Rogous. They are very conspicuously situated on a hill about one hundred and eighty feet high; a wall, in many places still twelve or fourteen feet high, surrounds the base of the hill, which is so overgrown with thick underwood, that it would be impossible to ascend it, but for the zeal of devotees whose pious feet have worn a pathway to the modern Greek chapel which now sanctifies its summit. Rather more than half-way up, another wall may be traced, and the top is again encircled by a heterogeneous mass of walls of the Grecian, Roman, and Frank eras. The foundations are of rude Cyclopean masonry. The chapel beforementioned is adorned with fragments of ancient architecture; capitals converted into bases, and *vice versâ ;* and portions of the

entablature form the steps to the door. Whence these came I cannot say, as Charadrum was only a military post, and we can scarcely give the Greeks of modern times the credit of conveying these remains from Arta, the nearest town, even for religious purposes; probably the place itself was formerly crowned with a temple. Polybius mentions Philip passing this place after the siege of Ambracus. The country around Rogous is rich and beautiful, and well covered with olive trees; the land rises abruptly to the northward to Mavro Vouno. There had been a bridge over the river, but at the time of my visit it was washed away, and we were obliged to ferry ourselves over in a canoe, or monoxolon, as they are here termed.

The celebrity which this gulf formerly enjoyed for the quantity and quality of its fish, it still merits—the red and grey mullet are most abundant; there are also plenty of soles and eels, and the prawns are the largest I ever saw. The sardinia fishery I have already noticed. The Greeks, whose only right is their nautical strength, usurp the lordship and monopoly of all the fisheries, and their flag is often displayed on the northern shores of the gulf.

The fisheries are constructed of reeds placed in the mud close together, and extending two hundred yards and upwards from the shore; they form a labyrinth terminating in a death-chamber, whence the fish are taken at pleasure with a hand-net. Off the mouths of the Arta and Louro, and where there are communications with the lakes, the fisheries are most extensive; they are, however, confined entirely to the northern shores.

The gulf is generally considered unhealthy, more especially during the months of July, August, and September, when the natives are careful not to expose themselves uncovered in the morning to the easterly, or land wind, which, coming off the swampy shores, is very chilly, and brings with it the marsh miasmata, producing remittent fevers of a dangerous nature.

During the time of my visit (June and July), the land and sea breezes were always regular, and the latter blew fresh—it set in between 10 and 11 A.M. and invariably died at sunset. The range of the temperature was from 76° to 89° during the day, and from 70° to 80° at night; the mean temperature at noon was 78°.

The general character of the hills on the Acarnanian side is round-topped and barren, descending gradually and undulating to the shores, which are generally rocky and steep-to—but to the northward the mountains are higher, sharp-ridged, and the descent to the plains more precipitous, presenting in many places, more especially Zalunga and Mavro Vouno, stupendous cliffs.

The eastern portion of the gulf is deepest; the most water we found was thirty-six fathoms, and the bottom throughout is stiff, black mud, excepting near the low, sandy shores.

There are two other islands not yet noticed, one called Gaidura nissi (Jackass island), off Cape La Scara, is low and rocky, and barren, presenting on its surface masses of limestone incrusted with gypsum. The other, Kiefalo nissi (Head island) is of the same nature as Korakò nissi, about fifteen or eighteen feet high, of soft sandstone, and covered with verdure.

I have purposely avoided entering into the *morale* of the people, as there are already so many able descriptions of them already before the public; suffice it to say, that the majority of the inhabitants are Greeks, many Albanians, and but few Osmanlees, who are for the most part government officers. The mode of travelling and transporting goods is by horses; the rate averaging three miles an hour, by which medium they reckon distance, eight hours being generally considered as a day's journey. The country abounds in snakes, many of which are venomous. Game, especially hares and partridges, are plentiful. The olive among trees, and the myrtle among shrubs, are the most common. There is no regularity in the tides, the rise, fall, and velocity being entirely dependent on the force of the wind.

VI.—*Account of East Falkland Island.* Communicated by Woodbine Parish, Esq., F.R.S. Read 14th Jan. 1833.

[The claims of Great Britain to the Falkland Islands having been lately renewed, the following account of the Eastern Isle may not be uninteresting. It was drawn up for me during my late residence in South America by Mr. Vernet, who formed a settlement and resided there for several years under an authority from the government of Buenos Ayres. Mr. Vernet's establishment was at Berkeley Sound, adjoining the ruins of that formerly planted at Port Louis by M. Bourgainville. It will be recollected that the British settlement, which was forcibly broken up by the Spaniards in 1770, and subsequently restored, was at Port Egmont, on the Western Island.—W. P.]

East Falkland Island is favourably situated both for colonization, and for the refreshment of vessels bound round Cape Horn.* Its proximity to the Cape, and its excellent harbours, most of which are of easy access, with good holding ground, and sufficient depth of water for even first-rate men-of-war, would alone make it a valuable possession. Whilst the facilities it affords for exercising ships' companies ashore, without the risk of losing them, together with the abundance of wild cattle and anti-scorbutic herbs found there, point it out as a most desirable resort for ships

* See also p. 105.

which have been long at sea, and whose crews are threatened with scurvy.

The climate on the island is, on the whole, temperate. The temperature never falls below 26° Fahrenheit in the coldest winter, nor rises above 75° in the hottest summer; its general range is from 30° to 50° in winter, 50° to 75° in summer. The weather is rather unsettled, particularly in winter; but the showers, whether of rain, snow, or hail, are generally of short duration, and their effects are never long visible on the surface of the ground. Thus floods are unknown; snow disappears in a few hours, unless on the tops of the mountains; and ice is seldom found above an inch thick. Thunder and lightning are of rare occurrence; fogs are frequent, especially in autumn and spring, but they usually dissipate towards noon. The winter is rather longer than the summer, but the difference is not above a month, and the long warm days of summer, with occasional showers, produce a rapid vegetation in that season.

The wind blows commonly from the north-west in summer, south-west in winter, and seldom long from the eastward in either season. The finest weather in winter is when the wind draws from the west or north-west; and, in summer, when it stands at north-west or north-east. A north wind almost always brings rain, especially in summer; and east and south-east winds are constantly accompanied by thick and wet weather. Snow squalls generally come from the S.S.E., S., or S.S.W. Storms are most frequent at the changes of the seasons, and blow commonly from S.S.W. to W.S.W.; but they seldom last above twenty-four hours.

The soil of East Falkland Island has been found well-adapted to cultivation, consisting generally of from six to eight inches of black vegetable mould, below which is either gravel or clay. Wheat and flax were both raised, of quality equal, if not superior, to the seed sown, which was procured from Buenos Ayres; and potatoes, cabbage, turnips, and other kinds of vegetables, produced largely, and of excellent quality. Fruit-trees were not tried, the plants sent from Buenos Ayres having perished before they arrived.

The soil also produces different kinds of vegetables wild, as celery, cresses, &c., and many other esculent plants, the proper names of which were not known to the settlers, but their palatable taste and valuable anti-scorbutic properties were abundantly ascertained by them. Among others is one which they called the tea-plant, growing close to the ground, and producing a berry of the size of a large pea, white with a tinge of rose-colour, and of exquisite flavour. A decoction of its leaves is a good substitute for tea, whence its name. It is very abundant.

No trees grow on the island; but wood for building was

obtained, tolerably easily, from the adjoining Straits of Magellan. For fuel, besides peat and turf, which are abundant in many places, and may be procured dry out of the penguins' holes, three kinds of bushes are found, called fachinal, matajo, and gruillera. The first of these grows straight, from two to five feet high, and the stem, in proportion to the height, is from half an inch to one inch and a half in diameter: small woods of this are found in all the valleys, and form good cover; it bears no fruit. The second is more abundant in the southern than in the northern part of the island; its trunk is nearly the thickness of a man's arm, very crooked, never higher than three feet, and bears no fruit. The gruillera is the smallest of the three, growing close to the ground, and abundant all over the island: being easily ignited, it was chiefly used as fuel when the people were away from the settlement, and to light the peat-fires in the houses. It bears a small dark-red berry of the size of a large pea, of an insipid taste.

The country, in the northern part of the island, is rather mountainous. The highest part was called San Simon, at no great distance from the bottom of Berkeley Sound. The tops of the mountains are thickly strewn with large boulders, or detached stones, of which quantities have fallen, in some places, in lines along their sides, looking like rivers of stones; these are alternated with extensive tracts of marshy ground, descending from the very tops of the mountains, where many large fresh-water ponds are found, from one to two feet deep. The best ground is at the foot of the mountains, and of this there is abundance fit for cultivation, in plains stretching from five to fifteen miles along the margin of the sea. In the southern peninsula there is hardly a rising ground that can be called a hill. Excellent fresh water is found everywhere, and may be procured either by digging, or from the rivulets, which flow from the interior towards the sea, through valleys covered with a rich vegetation.

Herds of wild horned-cattle exist on the island, sufficient to maintain a great many settlers; and wild hogs are abundant in the northern peninsula; wild horses are also found there, of small size, but very hardy, which, when broken in, as some were without difficulty, were found of great service to the settlement. Rabbits are in great numbers, of a large size and fine fur. Foxes too are found, but differing considerably from those of Europe, having a thick head, and coarse fur; they live chiefly on geese and other fowl, which they catch at night when asleep.

Game is extremely common, especially wild geese and ducks; of the former, two kinds were distinguished, the lowland or kelp-geese, and the upland geese; the latter were much superior in flavour, the former being of a fishy taste, living chiefly on mussels, shrimps, and kelp. Both were very tame,

and the upland geese were easily domesticated. They are finest eating in autumn, being then fattest, in consequence of the abundance at that season of tea-berries, of which they are very fond: the rest of the year they live on the short grass. They have a white neck and breast, with the rest of the body speckled of a fine brown marbled colour. The lowland gander is quite white, and the goose dark with a speckled breast.

Of ducks there are several kinds. The loggerheaded are the largest, and almost of the size of the geese; their flesh is tough and fishy; they cannot fly, and when cut off from the water are easily caught. The next size is also of inferior quality, tough and fishy; but the smaller kinds, which are not larger than young pigeons, are deliciously good, and are found in large flocks along the rivulets and fresh-water ponds. Snipes are found so tame that they were often killed by throwing ramrods at them. In addition to these, a great variety of sea-birds frequent the shores, of which the most valuable to sailors and settlers, from the quantity of eggs they deposit, are the gulls and penguins. These birds have their fixed rookeries, to which they resort, in numerous flocks, every spring; the gulls generally in green places near the shore, or on the small islands in the bays; the penguins chiefly along the steep rocky shores of the sea. The eggs of both are eatable, even with relish, after long confinement on board ship; the penguin's being, however, the best, and less strong than that of the gull. So numerous are these eggs, that on one occasion eight men gathered sixty thousand in four or five days, and could easily have doubled that number had they stopped a few days longer. Both gulls and penguins will lay six or eight each, if removed; otherwise, they only lay two and hatch them. The gulls come first to their hatching-places, the penguins a little later.

Fish abounds in all the bays and inlets, especially in spring, when they come to spawn at the mouths of the fresh-water rivulets. They generally enter and retire twice every day, at half-flood and half-ebb; and are in such numbers, that ten or twelve men could always catch and salt about sixty tons in less than a month. They were usually caught by a sweeping-net, but they also took the hook, being of a kind between the mullet and salmon. Their flavour was excellent; and when salted, they were considered superior to the cod; many ship-loads might be procured annually.

Of shell-fish there are only mussels and clams; they are very abundant, and easily gathered on the beach at low water.

Seals are found on the island, or rather on the rocks close to it; and hair-seals (lions and elephants) abound along its shores. Many black whales have been also caught in its neighbourhood;

in consequence of which the island has of late years been much resorted to by fishing-vessels, English, American, and French. Of these, eighty-nine touched at it between 1826 and 1831.

East Falkland Island is singularly cut into by the sea, forming various good harbours of easy access for vessels of almost any burthen. In steering into most of them, little other direction is necessary than to keep out of the kelp, which grows profusely on all the rocks; but as Berkeley Sound is both the most frequented, and in some respects the best, the following more specific instructions may be given regarding it.

" Vessels approaching Berkeley Sound from the northward should endeavour to make the land ten or fifteen miles west of the port, the prevailing winds being westerly; and when approaching from the southward should, in like manner, make allowance for the currents, which frequently run very strong to the northward. When entering the Sound, a sufficient berth must be given to a ledge of rocks, called the Volunteer Rocks, which run out from the north point about a mile and a quarter; outside of which, in nearly the same line, at a further distance of about another mile, is a single sunken rock, with only six feet water on it at low tide. When these rocks are cleared, and the Sound is fairly entered, there is no danger, except from a small ledge of rocks off Eagle Point, about two cables' length from the shore, with kelp growing all over it, and therefore easily seen. Above this point the Sound is quite clear till well up, when a ledge of five or six black rocks will be seen on the north side, behind which is an excellent harbour, called Johnson's Harbour, with good holding ground in six or seven fathoms, and greater convenience for watering than in any other part of the bay.

" If a ship, endeavouring to enter Berkeley Sound, find the wind blowing hard down, which is often the case, and is thus prevented getting to a suitable anchorage in the bay, a good port exists immediately south of the sound, and about two and a half miles from the small islands in its mouth, called Port William, or Harriet's Bay. This is of easy access, and fresh water may be easily obtained in it. In going in, ships should keep on the north shore, about two cables' length distant, as the tide runs strong. The flood runs to the southward, and the ebb to the north-east."

To the south of Berkeley Sound, the coast of East Falkland Island should not be approached too near, particularly in thick weather; there being no correct chart of it, and many low and dangerous islands lying off, some of them even out of sight of the land, particularly to the southward.

Of the annexed plans of East Falkland Island and Berkeley Sound, the first is but a sketch, and is not to be relied on as any



Bradbury [illegible] on the [illegible]

guide for pilotage. The second is more exact, being after a plan of the Sound made by the first lieutenant of the Uranie, French frigate, wrecked there in 1820; and since corrected by many personal observations made by the masters of different sealing ships.

VII.—*Account of the Ascent of the Peter Botte Mountain, Mauritius, on the 7th September,* 1832. Extracted from a private letter from Lieutenant Taylor, R.A.; and communicated by Mr. Barrow. Read 28th January, 1832.

You are no doubt aware, from my former letter, that the Peter Botte has always been considered inaccessible; and although a tradition exists of a man of that name having ascended it, and losing his life in returning, it is seldom believed, no authentic account remaining of the fact. A Frenchman, forty-two years ago, declared that he had got on the top by himself, and made a hole in the rock for a flag-staff; and his countrymen naturally believed him! but the value of this assertion may be also judged of by the present narrative. The ascent has been frequently attempted, and by several people, of late years; once by the officers of his Majesty's ship Samarang, who lost their way and found themselves separated from the Peter Botte itself by a deep cleft in the rock, and in consequence were compelled to return. Captain Lloyd, chief civil engineer, and your old friend Dawkins, made the attempt last year, and succeeded in reaching a point between the shoulder and the neck, where they planted a ladder, which did not however reach halfway up a perpendicular face of rock, that arrested their progress. This was the last attempt. Captain Lloyd was then, however, so convinced of the practicability of the undertaking, that he determined to repeat the experiment this year, and accordingly made all his preparations by the beginning of this month. On the 6th he started from town, accompanied by Lieutenant Phillpotts, of the 29th Reg., Lieutenant Keppel, R.N. (my old messmate), and myself, whom he asked to join him. He had previously sent out two of his overseers with about twenty-five negroes and sepoy convicts to make all the necessary preparations. They carried with them a sort of tent, and ropes, crow-bars, a portable ladder, provisions, and everything we could possibly want for three or four days, as we intended to remain on the shoulder of the mountain, close to the base of Peter Botte, until we either succeeded, or were convinced of its impossibility. These men had worked hard; and, on our arriving at the foot of the mountain, we found the tent and all our tools, &c. safely

H 2

lodged on the shoulder of the Peter Botte. I may as well describe here the appearance of the mountain. From most points of view it seems to rise out of the range which runs nearly parallel to that part of the sea-coast which forms the bay of Port Louis; but, on arriving at its base, you find that it is actually separated from the rest of the range by a ravine or cleft of a tremendous depth. Seen from the town (as you will perceive by the sketch) it appears a cone with a large overhanging rock at its summit; but so extraordinarily sharp and knife-like is this, in common with all the rocks in the island, that when seen *end on*, as the sailors say, it appears nearly quite perpendicular. In fact, I have seen it in fifty different points of view, and cannot yet assign to it any one precise form. But to my tale.

We dined that evening and slept at the house of a Frenchman in the plain below, and rose early next morning, much exhausted by the attacks of bugs. All our preparations being made, we started, and a more picturesque line of march I have seldom seen. Our van was composed of about fifteen or twenty sepoys in every variety of costume, together with a few negroes carrying our food, dry clothes, &c. Our path lay up a very steep ravine, formed by the rains in the wet season, which, having loosened all the stones, made it anything but pleasant; those below were obliged to keep a bright look-out for tumbling rocks, and one of these missed Keppel and myself by a miracle.

From the head of this gorge we turned off along the other face of the mountain; and it would have been a fine subject for a picture, to look up from the ravine below and see the long string slowly picking their 'kittle' footsteps along a ledge not anywhere a foot broad: yet these monkeys carried their loads full four hundred yards along this face, holding by the shrubs above; while below there was nothing but the tops of the forest for more than nine hundred feet down the slope.

On rising to the shoulder, a view burst upon us which quite defies my descriptive powers. We stood on a little narrow ledge or neck of land, about twenty yards in length. On the side which we mounted, we looked back into the deep wooded gorge we had passed up; while on the opposite side of the neck, which was between six and seven feet broad, the precipice went sheer down fifteen hundred feet to the plain. One extremity of the neck was equally precipitous, and the other was bounded by what to me was the most magnificent sight I ever saw. A narrow, knife-like edge of rock, broken here and there by precipitous faces, ran up in a conical form to about 300 or 350 feet above us; and on the very pinnacle old 'Peter Botte' frowned in all his glory. I have done several sketches of him, one of which, from this point, I send by the same ship as this letter.

After a short rest we proceeded to work. The ladder (see sketch) had been left by Lloyd and Dawkins last year. It was about twelve feet high, and reached, as you may perceive, about halfway up a face of perpendicular rock. The foot, which was spiked, rested on a ledge, not quite visible in the sketch, with barely three inches on each side. A grapnel-line had been also left last year, but was not used. A negro of Lloyd's clambered from the top of the ladder by the cleft in the face of the rock, not trusting his weight to the old and rotten line. He carried a small cord round his middle; and it was fearful to see the cool, steady way in which he climbed, where a single loose stone or false hold must have sent him down into the abyss; however, he fearlessly scrambled away till at length we heard him halloo from under the neck 'all right.' These negroes use their feet exactly like monkeys, grasping with them every projection almost as firmly as with their hands. The line carried up he made fast above, and up it we all four 'shinned' in succession. It was, joking apart, awful work. In several places the ridge ran to an edge not a foot broad; and I could, as I held on, half-sitting, half-kneeling across the ridge, have kicked my right shoe down to the plain on one side, and my left into the bottom of the ravine on the other. The only thing which surprised me was my own steadiness and freedom from all giddiness. I had been nervous in mounting the ravine in the morning; but gradually I got so excited and determined to succeed, that I could look down that dizzy height without the smallest sensation of swimming in the head; nevertheless, I held on *uncommonly hard*, and felt very well satisfied when I was safe under the neck. And a more extraordinary situation I never was in. The head, which is an enormous mass of rock, about thirty-five feet in height, overhangs its base many feet on every side. A ledge of tolerably level rock runs round three sides of the base, about six feet in width, bounded everywhere by the abrupt edge of the precipice, except in the spot where it is joined by the ridge up which we climbed. In one spot the head, though overhanging *its* base several feet, reaches only perpendicularly over the edge of the precipice; and, most fortunately, it was at the very spot where we mounted. Here it was that we reckoned on getting up: a communication being established with the shoulder by a double line of ropes, we proceeded to get up the necessary *matériel*,—Lloyd's portable ladder, additional coils of rope, crowbars, &c. But now the question, and a puzzler too, was how to get the ladder up against the rock. Lloyd had prepared some iron arrows, with thongs, to fire over; and, having got up a gun, he made a line fast round his body, which we all held on, and going over the edge of the precipice on the opposite side, he leaned back against the line, and

fired over the least projecting part: had the line broke he would have fallen 1800 feet. Twice this failed, and then he had recourse to a large stone with a lead line, which swung diagonally, and seemed to be a feasible plan: several times he made beautiful heaves, but the provoking line would not catch, and away went the stone far down below; till at length Æolus, pleased, I suppose, with his perseverance, gave us a shift of wind for about a minute, and over went the stone, and was eagerly seized on the opposite side.—Hurrah, my lads, 'steady's' the word! Three lengths of the ladder were put together on the ledge; a large line was attached to the one which was over the head, and carefully drawn up; and, finally, a two-inch rope, to the extremity of which we lashed the top of our ladder, then lowered it gently over the precipice till it hung perpendicularly, and was steadied by two negroes on the ridge below.—'All right, now hoist away!' and up went the ladder, till the foot came to the edge of our ledge, where it was lashed in firmly to the neck. We then hauled away on the guy to steady it, and made it fast; a line was passed over by the lead-line to hold on, and up went Lloyd, screeching and hallooing, and we all three scrambled after him. The union-jack and a boat-hook were passed up, and old England's flag waved freely and gallantly on the redoubted Peter Botte. No sooner was it seen flying, than the Undaunted frigate saluted in the harbour, and the guns of our saluting battery replied: for though our expedition had been kept secret till we started, it was made known the morning of our ascent, and all hands were on the look-out, as we afterwards learnt. We then got a bottle of wine to the top of the rock, christened it 'King William's Peak,' and drunk his Majesty's health hands round the Jack, and then 'Hip, hip, hip, hurrah!'

I certainly never felt anything like the excitement of that moment; even the negroes down on the shoulder took up our hurrahs, and we could hear far below the faint shouts of the astonished inhabitants of the plain. We were determined to do nothing by halves, and accordingly made preparations for sleeping under the neck, by hauling up blankets, pea-jackets, brandy, cigars, &c. Meanwhile, our dinner was preparing on the shoulder below; and, about 4 P.M. we descended our ticklish path, to partake of the portable soup, preserved salmon, &c. Our party was now increased by Dawkins and his cousin, a lieutenant of the Talbot, to whom we had written, informing them of our hopes of success; but their heads would not allow them to mount to the head or neck. After dinner, as it was getting dark, I screwed up my nerves, and climbed up to our queer little nest at the top, followed by Tom Keppel, and a negro, who carried some dry wood and made a fire in a cleft

under the rock. Lloyd and Phillpotts soon came up, and we began to arrange ourselves for the night, each taking a glass of brandy to begin with. I had on two pair of trousers, a shooting waistcoat, jacket, and a huge flushing jacket over that, a thick woollen sailor's cap, and two blankets: and each of us lighted a cigar as we seated ourselves to wait for the appointed hour for our signal of success. It was a glorious sight to look down from that giddy pinnacle over the whole island, lying so calm and beautiful in the moonlight, except where the broad black shadows of the other mountains intercepted the light. Here and there we could see a light twinkling in the plains, or the fire of some sugar manufactory; but not a sound of any sort reached us except an occasional shout from the party down on the shoulder (we four being the only ones above). At length, in the direction of Port Louis, a bright flash was seen, and after a long interval the sullen *boom* of the evening-gun. We then prepared our pre-arranged signal, and whizz went a rocket from our nest, lighting up for an instant the peaks of the hills below us, and then leaving us in darkness. We next burnt a blue-light, and nothing can be conceived more perfectly beautiful than the broad glare against the overhanging rock. The wild-looking group we made in our uncouth habiliments, and the narrow ledge on which we stood, were all distinctly shown; while many of the tropical birds, frightened at our vagaries, came glancing by in the light and then swooped away, screeching, into the gloom below; for the gorge on our left was dark as Erebus. We burnt another blue-light, and threw up two more rockets, when, our laboratory being exhausted, the patient-looking, insulted moon had it all her own way again. We now rolled ourselves up in our blankets, and, having lashed Phillpotts, who is a determined sleep-walker, to Keppel's leg, we tried to sleep; but it blew strong before the morning—and was very cold! We drank all our brandy, and kept tucking in the blankets the whole night without success. At day-break we rose, stiff, cold, and hungry; and I shall conclude briefly by saying, that after about four or five hours hard work, we got a hole mined in the rock, and sunk the foot of our twelve-foot ladder deep in this, lashing a water-barrel, as a landmark, at the top; and, above all, a long staff, with the Union Jack flying. We then, in turn, mounted to the top of the ladder to take a last look at a view such as we might never see again; and, bidding adieu to the scene of our toil and triumph, descended the ladder to the neck, and casting off the guys and hauling-lines, cut off all communication with the top.

In order to save time and avoid danger, we now made fast a line from the neck to the shoulder, as taut as possible; and hanging on our traps by means of rings, launched them one by one from

the top, and down they flew, making the line smoke again. All were thus conveyed safely to the shoulder, except one unlucky bag, containing a lot of blankets, my spy-glass, and sundry other articles, which, not being firmly fixed, broke the preventer-line, and took its departure down to Pamplemousses. We at length descended, and reached the shoulder all safe and without any accident, except that of the blankets—not a rope-yarn being left to show where we got up. We then breakfasted, and after a long and somewhat troublesome descent, got to the low country, and drove in Lloyd's carriage to town, where we were most cordially welcomed by all our countrymen; though, I believe, we were not quite so warmly greeted by the French inhabitants, who are now constrained to believe that their countryman *alone* did not achieve the feat, and that the British ensign has been the first to wave over the redoubtable Peter Botte.*

* We are indebted also to the private correspondence of the writer of the above communication for the following account of a phenomenon, not unfrequent in many parts of the world, but of which the particulars, as exhibited on the south shore of the Mauritius, are here described, and accompanied by a sketch.

'On the south side of the island is a point called "The Souffleur," from the following circumstance. A large mass of rock runs out into the sea from the main land, to which it is joined by a neck of rock not two feet broad. The constant beating of the tremendous swell which rolls in has undermined it in every direction, till it has exactly the appearance of a gothic building with a number of arches in the centre of the rock, which is about thirty-five or forty feet above the sea; the water has forced two passages vertically upwards, which are worn as smooth and cylindrical as if cut by a chisel. When a heavy sea rolls in, it of course fills in an instant the hollow caverns underneath, and finding no other egress, and being borne in with tremendous violence, it rushes up these chimneys, and flies roaring furiously to a height of full sixty feet. The moment the wave recedes the vacuum beneath causes the wind to rush into the two apertures with a loud humming noise, which is heard at a considerable distance. My companion and I arrived there before high water, and having climbed across the neck of rock, we seated ourselves close to the chimneys, where I proposed making a sketch, and had just begun, when in came a thundering sea, which broke right over the rock itself, and drove us back much alarmed. Our negro guide now informed us, that we must make haste to recross our narrow bridge, as the sea would get up as the tide rose. We lost no time, and got back dry enough; and I was obliged to make my sketches from the main land. In about three-quarters of an hour the sight was truly magnificent. I do not exaggerate in the least when I say, that the waves rolled in long and unbroken full twenty-five feet high, till, meeting the headland, they broke clear over it, sending the spray flying over to the main-land; while from the centre of this mass of foam, the Souffleur shot up with a noise which we afterwards heard distinctly between two and three miles. Standing on the main cliff, more than a hundred feet above the sea, we were quite wet. All we wanted to complete the picture was a large ship going ashore.'

VIII.—*Recent Discoveries in the Antarctic Ocean.* From the Log-book of the Brig Tula, commanded by Mr. John Biscoe, R. N. Communicated by Messrs. Enderby. Read, 11th February, 1833.

THE brig Tula, of 148 tons, belonging to Messrs. Enderby, and commanded by Mr. John Biscoe, R. N., left the port of London on the 14th July, 1830, on a South-Sea sealing voyage, but with special instructions from her owners also to endeavour to make discoveries in a high southern latitude. She was liberally equipped with whatever appeared requisite or desirable on such an enterprise; and was accompanied by the cutter Lively, in the same employ, and attached to the Tula on the footing of a tender.

The two vessels, after touching at the Cape Verde Islands for salt, arrived off the Falkland Islands on the 8th November, and anchored in Port Louis, Berkeley Sound, on the 10th. Captain Biscoe speaks highly of the convenience of this port for vessels bound round Cape Horn: fish, bullocks, and fresh water can be easily procured, with a variety of anti-scorbutic herbs to use as vegetables: the entrance being also clear, the anchorage good, and the depth of water considerable close to the beach. A refitting yard here, he considers, could be very easily established, and would be both a great public and private benefit.

On the 27th November, having completed their water, the Tula and her consort again proceeded to sea; and, on their way to Sandwich Land, kept a vigilant look-out for the Aurora Islands, laid down by the Spaniards in lat. 53° 15′ S., long. 47° 57′ W.;* but which, having been unsuccessfully sought for by Captain Weddell, and now again by Captain Biscoe, must be either considered henceforward as not existing, or looked for in some other position. On the 10th December, in long. 29° 14′ W., many icebergs were passed, which were conceived to be drifting between Sandwich Land and New South Shetland; and among them the two vessels parted company, to their mutual great anxiety, and did not again meet till the 14th. On the 20th, an island was made, in lat. 58° 25′ S., long. 26° 55′ W.; but its appearance being very discouraging,—in Captain Biscoe's words, 'terrific, being nothing more than a complete rock, covered with ice, snow, and heavy clouds, so that it was difficult to distinguish

* These islands were supposed to have been discovered by the ship Aurora, in 1762; and again seen in 1790, by the Principessa. In 1794, also, the corvette Atrevida went purposely to ascertain their position; and, after passing nine days in their immediate vicinity, reported the above as the latitude and longitude of the southernmost; at the same time placing a second in 53° 3′ S., 47° 53′ W., and a third in 52° 37′ S., 47° 43′ W.—See Weddell's Voyage, p. 62: and other recent attempts made to find them have been equally unsuccessful—see Morrell's Voyages (New York, 1832).

one from the other,'—no attempt was then made to land on it. Proceeding to the southward, on the following day, another island was distinguished in the S.W., similar to the preceding one, which now bore W. by N.; and the cutter was directed to examine both, in which her success was very incomplete, the boats not being able to effect a landing on either. These were the Montague and Bristol Islands of the charts, but which Captain Biscoe places fifty miles further west than they are usually laid down. The thermometer stood at 29° in the air, and 31° in the water. A third, Friesland Island, was seen to the southward of them; and a fourth, to the northward.

Several following days were spent in endeavouring to get to the southward, and, if possible, also to the westward, there being strong indications of land in that quarter; but these were all unsuccessful. The field-ice was either quite continuous and unbroken, or where bays were formed in it, and entered, these were found open but a little way, and the vessels were obliged to return as they went in. Fortunately, the water was remarkably smooth even when the wind, which hung to the westward, blew strong; and this circumstance both facilitated the manœuvring of the vessels, and encouraged their crews to persevere, by confirming their surmises as to the existence of land in the neighbourhood. On the 29th, at noon, the latitude observed was 59° 11′ S., long. 24° 22′ W.; but the wind blowing then hard from the south-west, further investigation in that quarter was abandoned; the islands before seen were again sighted, and the longitudes of their centres being further determined, and confirmed to be about 27° W., sail was made to the eastward.

Captain Biscoe was thus prevented from making any specific discovery in this meridian, though he has furnished strong presumptive evidence that a considerable body of land stretches due south from the known heads of Sandwich Land; while, on the other hand, the very high latitude (74° 15′ S.) attained by Captain Weddell, a few degrees to the westward (viz., in 36° W.), further proves that its western extremity is at no great distance from these heads.

On the 5th January (1831), the Tula and her companion were in lat. 59° 9′ S., long. 21° 52′ W.; and on the 7th, in lat. 59° 35′ S., long. 20° 21′ W.; closely skirting the field-ice the whole way, and examining every inlet, in hopes of finding a passage through it to the southward, and, as they hoped, to clear water. In this, however, they were constantly disappointed; and, on the contrary, on the evening of the 7th, says Captain Biscoe, 'my hopes in this direction were destroyed, for I suddenly found myself at the head of a bay of firm ice, with a view, from the masthead, to an extent of at least twenty miles in every direction; and,

to the southward, the ice appeared so smooth and firm, that any one might have walked on it. The weather, too, was now so clear, that, I am convinced, land of any considerable elevation might have been seen eighty or ninety miles. What further astonished me was, that there were no living animals of any kind about this ice, with the exception of one or two small peterels,—not even any penguins, which at other times had been very numerous. These circumstances almost convinced me that this ice must have been formed at sea; the temperature of the water being then 30°, and that of the air 31°, with frequent and very heavy falls of snow. Nevertheless, there were strong indications of land in the south-west, though none was actually within our horizon; and the water continued very smooth.'

From the 7th to the 16th January, the course made good was nearly due east; the latitude being then 59° 16′ S., longitude 7° 14′ W. The wind had hung during the interval to the south, with fresh breezes, on two occasions, from south-west, and a considerable sea, as though the distance from land was now increasing. The ice was also, from time to time, more broken into bergs, fifty-eight of them being at one time in sight together; and on the 16th, the temperature of the water was 34°, of the air in the shade 45°, in the sun 77°, with a corresponding genial warmth to the feelings of the crew. The wind also veered now to the westward, and the vessels were hauled up to the south-east, steering between ice-bergs and broken patch ice; but scarcely any birds were yet to be seen; though, on the 20th, two nellies* were observed, and one albatross, being the first since leaving the latitude of South Georgia. On the 21st, the latitude attained was 66° 16′, longitude 00° 24′ 30″ W.; temperature of the water 36°, of the air in the shade 38°; no ice in sight; but the wind again drawing to the south and south-east, and many indications of land in the same quarter. Several spotted eaglets, (one, apparently, a new variety, rather larger than a Cape pigeon, with brown beak, wings, and head, the other parts white,) with some blue peterels, were in sight. On the 23d, the wind was from S.S.W., and came in puffs, as from land; the water was smooth, and at times discoloured; and many eaglets and Cape pigeons hovered about the vessels; lat. 67° 42′ S., long. 3° 31′ E.; temperature of the air at midnight 31°, of the water 35°. The ice now, however, began again to close in, and the wind to hang to the south-east, frequently fresh, but generally more steady than for some days previously. On the 27th the latitude was 68° 1′ S., long. 10° 7′ E.; temperature of the air 31°, of the water 34°; wind E.S.E., blowing strong, with a heavy swell; much snow falling, and many ice-

* "A bird of the peterel kind, of a mixed grey and brown colour, an unpleasing appearance, and very voracious."—Weddell, p. 59.

bergs in sight, besides patch ice, or rather, as it appeared, field-ice, with its outer edge somewhat broken. Few birds were in sight, and those chiefly penguins, seated on icebergs. Much danger was also here encountered, while working among the ice-bergs and patches, but the object of getting to the south-east was steadily pursued. On the 1st February, the latitude was 68° 51′ S., long. 12° 22′ E.; temperature of the air 30°, of the water 34°. A seal was seen near the Lively; and many snow-birds, with brown eaglets, hovered about the vessels; while at different times, birds, thought at the time to be land-birds, but afterwards believed to be king-birds, which, though aquatic, do not go far from land, were seen at a distance flying towards the south-west. The water also was of a lighter colour; but no land could be distinctly or certainly made out, nor any soundings obtained. On the 4th, the appearances became still more conclusive, and the impression was repeatedly renewed that land was seen; but yet, even on this meridian, Captain Biscoe is not certain on this head; and the ice trending now to the northward, a somewhat lower latitude was necessarily gained. On the 8th, at noon, the position was 67° 12′ S., 27° 15′ E.; temperature of the air 33° (in the sun 84°), of the water 33°. The wind then changed to the E.S.E., and blew hard for some days, with a heavy tumbling sea, and much danger from icebergs; through all which difficulties, however, the vessels persevered in making way to the eastward. On the 17th, the position was 66° 44′ S., 38° 5′ E. On the 19th, they crossed Captain Cook's track in 1773, and found the field-ice precisely in the position in which he left it. On the 25th, saw a very distinct appearance of land in lat. 66° 2′, long. 43° 54′ E., temperature of the water 30°, with many ice-islands and patches of field-ice also in sight; but it was speedily lost among these, and could not be again distinctly made out. Several seals and penguins, with one young sea-elephant, were here also seen; and the margin of the solid body of ice was nearly as high as the North Foreland, and much resembled it. At length, on the 27th, in lat. 65° 57′ S., long. 47° 20′ E,, land was distinctly seen, of considerable extent, but closely bound with field-ice; the temperature of the air at the time being 22°, considerably lower than had been previously experienced; that of the water 30°; and, for the first time, extraordinarily vivid coruscations of aurora australis, 'at times rolling,' says Captain Biscoe, 'as it were, over our heads in the form of beautiful columns, then as suddenly changing like the fringe of a curtain, and again shooting across the hemisphere like a serpent; frequently appearing not many yards above our heads, and decidedly within our atmosphere. It was by much the most magnificent phenomenon of the kind that I ever witnessed; and although the vessel was in

considerable danger, running with a smart breeze and much beset, the people could scarcely be kept from looking at the heavens instead of attending to the course.'

Every effort was now made to close with the land thus discovered; and the most imminent risk was run during a heavy gale of wind, which began on the 5th March, and continued, increasing to a perfect hurricane, till the 7th. In the course of it, the two vessels again separated, the Tula was much injured, several of her men were severely hurt, and their health seriously affected by exposure to the cold. Its direction was between E. N. E. and N.E.; and, on the 8th, when an observation was again obtained, the drift was ascertained to have been 120 miles N. N.W. Sail being then made to endeavour to get to the south-east, on the 16th, nearly the same land was again made; the longitude being now 49° E. A head-land, previously seen, was recognized, and called Cape Ann; and unceasing efforts were made, for some days, to approach nearer it, but all in vain; and the ship's company so rapidly sunk in health and strength, that it became imperatively necessary to seek a more genial climate. Great uneasiness was also now entertained about the safety of the Lively cutter, which had not been seen since the 6th instant; and which, it seemed probable (if she had survived the gale at all), had sought a lower latitude, and made for Van Diemen's Land. On the 6th April, after nearly three weeks of the severest fatigue, Captain Biscoe determined to do the same thing, never having approached this forbidden shore (which has, with great propriety, been called Enderby's Land) nearer than from twenty to thirty miles;—and arrived in the Derwent on the 7th May ensuing; two of his men having died on the passage, and the others being so reduced that the ship was entirely navigated by the three officers, one man, and a boy. The nights, during most of the period, were so dark, except when occasionally illumined by the aurora, that in the helpless state of the crew, and their utter inability to meet any sudden exigency, it was deemed expedient to lie to every evening till the following morning. The winds were uniformly fair after getting below 60° south altitude.

The Lively did not rejoin the Tula, in the Derwent, till the following August, having been unfortunate in her first land-fall, and been compelled to put in, and refresh her people at Port Philip, in New South Wales. Both vessels again put to sea on the 10th October, 1831, and remained on the coast of New Zealand, and among the Chatham and Bounty Islands, sealing, but with very indifferent success, till the 4th January, 1832. They then again bore away to the south-east; the only remark of geographical importance, during this interval, being a correction in the position of the Bounty Islands, from 179° 6' E., in which

they are usually placed, to 178° 26′ E., in which Captain Biscoe conceives them to lie.

The first object now pursued was to touch at the Nimrod Islands, laid down in 56° 3′ S., and 157° 50′ W.; but the search for them was ineffectual; and Captain Biscoe is certain that they do not exist, at least where thus placed. The water here, however, looked discoloured, as though on a bank, but no soundings could be obtained. On the 14th January, in 56° 26′ S., 156° 48′ W., many birds were seen, and much sea-weed was floating about. Many squalls of snow also came from the southward; and on the 25th, in latitude 60° 45′ S., longitude 132° 7′ W., icebergs were again met with; the mean temperature of the air being 37°. On the 31st, about a hundred of these bergs were in sight together; and the clouds hung constantly low and heavy in the south-west, as though land was in that quarter; but the wind coming round to the north-east, and the barometer falling, with other indications of a gale, it was considered inexpedient to examine this appearance more closely.

On the 3d February, in lat. 65° 32′ S., long. 114° 9′ W., the phenomenon was observed of an ice-island falling to pieces, 'which it did very near the Tula, with a noise like a clap of thunder, and the sea was immediately covered with the fragments, only a small nucleus of the original mass remaining together.' On the 12th February, in lat. 66° 27′ S., long. 81° 50′ W., many birds were again seen (albatrosses, penguins, Cape pigeons, &c.) with several hump and finned-back whales; and no fewer than two hundred and fifty ice-islands were counted from the deck. On the 15th land was again seen, bearing E.S.E., but at a great distance; the latitude being then 67° 1′ S., long. 71° 48′ W.; and sail was made to close it. On the following morning, it was ascertained to be an island, and called Adelaide Island, in honour of her majesty: and, in the course of the ensuing fortnight, it was further made out to be the westernmost of a chain of islands, lying E.N.E. and W.S.W., and fronting a high continuous land, since called Graham's Land, which Captain Biscoe believes to be of great extent. The range of islands has been also since called Biscoe's Range, after the discoverer.

'Adelaide Island has a most imposing and beautiful appearance, with one high peak shooting up into the clouds, and occasionally appearing both above and below them, and a lower range of mountains extending about four miles, from north to south, having only a thin covering of snow on their summits, but towards their base buried in a field of snow and ice of the most dazzling brightness, which slopes down to the water, and terminates in a cliff of ten or twelve feet high, riven and splintered in every direction to an extent of two or three hundred yards from its edge. At a distance

of three miles no bottom could be found with 250 fathoms of line; and round all the islands the depth of water was considerable. One, called Pitt's Island (in lat. 66° 20′ S., long. 66° 38′ W.), has many bays; and forms, with the main land behind, a good harbour for shelter, but the bottom is rocky. No living animal was found on any of these islands; and not many birds, although only a few miles to the northward they were very numerous.'

On the 21st February, Captain Biscoe succeeded in landing on what he calls the main-land, and took formal possession of it: the highest mountain in view being called Mount William, after his Majesty; and the next, Mount Moberly, in honour of Captain Moberly, R.N. The place was in a deep bay, 'in which the water was so still, that could any seals have been found, the vessels could have been easily loaded, as they might have been laid alongside the rocks for the purpose. The depth of water was also considerable, no bottom being found with twenty fathoms of line almost close to the beach; and the sun was so warm that the snow was melted off all the rocks along the water-line, which made it more extraordinary that they should be so utterly deserted.' The latitude of Mount William was determined to be 64° 45′ S., long. 63° 51′ W.

Captain Biscoe, after this, repaired to the South Shetland Islands, where he was driven ashore, lost his rudder, and very narrowly escaped shipwreck; and, after touching at the Falkland Islands, near which he again parted company with the Lively, proceeded to St. Catharine's, in Brazil, where he learned her total loss on Mackay's Island (one of the Falklands); the crew, however, having been saved, and brought away by a Monte Video cruiser. He thence returned home; and the following general observations may properly conclude this abstract of his log.

1. In the very high latitudes, when actually, as it were, within the ice, the winds were almost uniformly from the south, round by S.E. to E.N.E.; which, being contrary winds to a vessel in proceeding from west to east, Captain Biscoe is inclined to recommend that future attempts of the same nature should be made in the opposite direction, viz. from east to west. Outside the ice, however, the winds were constantly westerly; and it may therefore admit of doubt, whether the convenience of having a fair wind at command, whenever required (as in the Tula's case), to run for shelter and repairs, and of which advantage may be then safely taken, be not of more importance, than when its possession can seldom be of vital consequence, and may frequently lead to rashness and imprudence. 2. The Auroræ Australes were only occasional; but were sometimes extraordinarily vivid, and in these cases were always succeeded by bad weather. They were not observed to have any effect on the compasses. 3. The following table shows the variation of the compass throughout the voyage:—

Latitude observed.	Longitude by Chronometer.	Variation.	Latitude observed.	Longitude by Chronometer.	Variation.
58° 18′ S.	23° 14′ W.	2° 00″ E.	41° 24′ S.	150° 25′ E.	11° 00″ E.
59 35	18 54	1 30	40 12	178 13 W.	10 00
58 02	10 02	8 12 W.	52 44	175 52	13 00
59 16	7 14	11 30	56 26	170 30	16 00
62 25	2 28	15 00	55 55	149 49	Decreasing E.
66 48	1 02 E.	20 30	64 21	119 43	12 00
67 40	6 33	19 44	64 06	110 46	28 00
67 57	8 28	21 12	66 27	78 04	— 32
68 30	14 42	23 12	64 53	67 03	26 20
68 43	22 25	28 44	64 20	65 20	26 00
68 58	23 45	29 10	37 52	51 38	12 00
66 56	36 57	33 00	36 46	47 50	11 00
67 50	36 38	37 12	33 32	44 50	8 00
66 46	41 10	40 22	31 05	43 46	4 30
65 16	49 27	40 10	20 01	29 00	6 04 W.
61 16	64 47	42 28	13 29	24 47	7 40
54 57	104 32	27 38	36 53 N.	34 04	20 40
51 53	129 09	None.	39 34	28 36	20 40
48 40	139 55	Easterly.			

[*Note.*—As a whole, the above voyage is interesting. It has added one more to the many examples previously set by British seamen of patient and intrepid perseverance amidst the most discouraging difficulties; and the exertions used have not been without a certain reward. Two distinct discoveries have been made, at a great distance the one from the other; and each in the highest southern latitude, with very few exceptions, which has yet been attained, or in which land has yet been discovered. The probability seems thus to be revived of the existence of a great Southern Land, yet to be brought upon our charts, and possibly made subservient to the prosperity of our fisheries; so strongly, indeed, are Messrs. Enderby impressed with this probability, that, undeterred by the heavy loss which they have incurred by the late voyage, they propose again sending out Captain Biscoe this season, on the same research. To encourage his future exertions, by paying a just tribute to the past, the Council of the Royal Geographical Society have awarded him their Royal Premium for 1832. And the Lords Commissioners of the Admiralty have resolved to send an officer of the Royal Navy, Mr. Rea, as passenger in his ship, to assist him in those scientific observations which, whatever may be the fate of the commercial speculation confided to him, will probably make his next voyage still more valuable than that now concluded. The expedition will sail in July.]

IX.—*Substance of a Geographical Memoir on the Indus.* By Lieut. Burnes, E. I. C. S. Communicated by the Court of Directors of the East India Company. Read 25th March, 8th and 22d April, 13th and 27th May, 1833.

A General View of the Indus.—There is an uninterrupted navigation of the Indus from the sea to Lahore; and the distance, by the course of the river, amounts to about a thousand British miles.

The Indus, when joined by the Punjab rivers, never shallows, even in the dry season, to less than fifteen feet, and seldom preserves so great a breadth as half a mile. The Chenab, or Acesines, has a medial depth of twelve feet, and the Ravee, or Hydraotes, is about half the size of that river. These are the minima of soundings on the voyage, but the usual depth of the three rivers cannot be rated at less than four, three, and two fathoms.

This extensive inland navigation, open as I have stated it to be, can only be considered traversable to the boats of the country, which are flat-bottomed, and do not draw more than four feet of water, when heavily laden. The largest carry about seventy-five tons English. Science and capital might improve the build of these vessels, but in extending our commerce, the present model would ever be found most convenient. Steam vessels could ply if constructed in this manner, but no vessel with a keel could be safely navigated.

The voyage to Lahore occupied exactly sixty days, but the season was most favourable, as the S.W. winds had set in, while the stronger inundation of the periodical swell had not commenced. We reached Mooltan on the fortieth day, and the remaining time was expended in navigating the Ravee, which is a most crooked river. The boats sailed from sunrise to sunset, and when the wind was unfavourable, were dragged by ropes through the water.

There are few rivers in the world where steam might be used with better effect than on the Indus. It has no rocks or rapids to obstruct the ascent, and the current does not exceed two and a half miles an hour. Our daily progress sometimes averaged twenty miles by the course of the river, for a vessel can be hauled against the current at the rate of one and a half mile an hour. With light breezes we advanced two miles an hour, and only when it approached to a hurricane, could we stem the river at the rate of three miles. Steam would obviate the inconveniences of this slow and tedious navigation, and I do not doubt but Mooltan might be reached in twenty instead of forty days. From that city a commercial communication could best be opened with the neighbouring countries.

A boat may drop down from Lahore to the sea in fifteen days,

as follows:—to Mooltan in six—to Bukkur in four—to Hyderabad in three—and to the sea-ports in two. This is of course the very quickest period of descent, and, I may add, that it has never been tried of late, for there is no trade between Sinde and the Punjab by water.

There are political obstacles to using the Indus as a channel of commerce. The people and princes are ignorant and barbarous. The former plunder the trader, and the latter over-tax the merchants, so that goods are sent by land and by circuitous routes. The absence of trade arises from no physical obstacles, and is to be chiefly traced to this erroneous policy of the Sinde government. There are about seven hundred boats between the sea and Lahore, and this number suffices for ferrying and all other purposes.

On the Mouths of the Indus.—The river Indus is one of the largest in the world. Like the Nile and the Ganges, it reaches the ocean by many mouths, which diverging from the parent stream, form a Delta of rich alluvium. At a distance of sixty miles from the sea, and about five miles below the ancient city of Tatta, the Indus separates into two branches. The right arm is named Buggaur, and the left Sata. This is a peculiarity of this stream as ancient as the days of the Greeks, and the historian of Alexander the Great expressly mentions it in these words:—'Near Puttala (Tatta) the river Indus divides itself into two vast branches.'—Arrian, lib. vi.

Of these two branches, the left one, or Sata, pursues nearly a southern course to the ocean, following the direction of the great river from which it is supplied, while the right, or Buggaur, deviates at once from the general track of the Indus, and reaches the sea by a westerly course almost at right angles to its twin river.

The eastern branch, or Sata, is the larger of the two, and below the point of division, is one thousand yards wide; it also affords egress to the principal body of the water, and though it divides and subdivides itself into numerous channels, and precipitates its water into the sea by no fewer than seven mouths within the space of thirty-five miles, yet such are the velocity and violence of the stream, that it throws up sand-banks or bars, and only one branch of this many-mouthed arm is entered by vessels of fifty tons. The water out to sea from them during the swell of the river is fresh for two leagues, and the largest of them, the Gorah, has cast up a dangerous sand-bank which projects directly out from the land for fifteen miles.

The western arm which is called Buggaur, on the other hand, flows in one stream, passing Peer Putta, Bohaur, and Darajee, to within five or six miles of the sea, when it divides into two navigable branches, the Pittee and Pieteeanee, which fall into the ocean

about twenty-five miles apart of each other. These two are considered the great mouths of the Indus, and were frequented, till lately, by the largest native boats, being yet accessible to them; but, for three years past, the channel of the Buggaur has been comparatively deserted by the river, and though it contains two fathoms of water, as high as Darajee, yet it shallows above that town, and in the dry season, is in some places only knee deep, its bed, which is usually nearly half a mile broad, having at that place but a breadth of one hundred yards. The name "Buggaur" signifies "destroy," and it is said to be so applied to this arm of the Delta, from the destructive velocity with which it runs to the sea, overwhelming trees, bushes, &c., and destroying the country on its banks. Though this alteration has diverted the trade from Darajee to the banks of the Sata, the country near the Buggaur is as rich as it was previously; and though the branch itself is not navigated, yet there is frequently two fathoms in its bed, and nowhere a deficiency of water for flat-bottomed boats. During the swell it is a fine river, and will in all probability shortly regain its former eminence.

The land embraced by these arms of the Indus extends, at the junction of the rivers with the sea, to about seventy British miles, and this correctly speaking is the existing Delta of this river. The direction of the sea-coast along this line is N.N.W.

But the Indus covers with its waters a wider space than is thus described, and has two other mouths to the eastward of those thrown out by the Sata, viz., the Seer and Koree, the latter the boundary line which divides Cutch from Sinde. The rulers of that country, however, have hemmed in the course and diverted the waters of both these branches, by canals for irrigation, so that neither of them reaches the sea. With the addition of these forsaken branches, the Indus presents a face of about one hundred and twenty-five British miles to the sea, which it may be said to enter by eleven mouths. The latitude of the most western embouchure is about 24° 40′, that of the eastern 23° 30′ N., so that in actual latitude there is an extent of about eighty statute miles.

The inconstancy of the Indus through the Delta is proverbial, and there is great difficulty and danger in its navigation. It has thus, in these days, among the people of Sinde, as bad a character as has been left to it by the Greek historian. The water is cast with such impetuosity from one bank to another, that the soil is constantly falling in, and huge masses of clay may be hourly seen tumbling into the stream, often with a tremendous crash. In some places, the water when resisted by a firm bank, forms gulfs and eddies of great depth, which contain a kind of whirlpool, in which vessels wheel round and require every care to prevent accidents

The current in such places is really terrific, and in a high wind the waves rage as in the great ocean. To avoid these eddies, and the rotten parts of the banks, seemed the chief objects of solicitude to the boatmen.

It is worthy of notice with regard to the river Indus, that those mouths which are least favoured by the fresh water, are most accessible to large vessels from the sea, for they are more free from sand-banks, which the river-waters, when rushing with violence, never fail to raise. Thus, the Buggaur, which I have just represented as full of shallows, has a deep and clear stream from Darajee to the sea. The Hoogly branch of the Ganges is, I believe, navigable from a similar cause.

Having thus generalized on the leading features of the Indus below Tatta, I shall proceed to describe the several mouths with their harbours, depth of water, and such other facts relating to each, as have fallen under my notice.

Beginning from the westward, we have the Pittee-mouth, an embouchure of the Buggaur, which falls into what may be called the bay of Curachee. It has no bar, but a large sand-bank and island outside prevent a direct passage into it from the sea, and narrow the channel to about half a mile at its mouth; at low water it is even less than five hundred yards, and proceeding upwards contracts to one hundred and sixty yards in some places; but its general width is three hundred yards. At the shallowest part of the Pittee there was a depth of nine feet at low water, and the tide rose nine feet more at full moon. There is everywhere a depth of two fathoms as high as Darajee, and more frequently five and six, sometimes seven and eight. Where two branches meet, the water is invariably deep. At a distance of six miles up the Pittee, there is a rock stretching across the river, but it has nine feet water on it at low tide. The general course of the Pittee for the first thirty miles is W.N.W., but it enters the sea by a channel due north. The Pittee is exceedingly crooked, and consists of a succession of short turnings, in the most opposite directions, even from south to north; the water from one angle is thrust upon another, which leaves this river alternately deep on both sides. Where the banks are steep, *there* is the channel found; and again where they gradually slope, the water shallows invariably exist. This, however, may be remarked of all rivers which flow over a flat country. I may mention that there is no fresh water in the Pittee, nearer than thirty miles from the sea. The brushwood on its banks is very dense, and for fifteen miles up presses close upon the river. We navigated this branch to that extent, and crossed it in two places higher up, at Darajee and Bohaur, where it had two fathoms water.

The Pieteeanee quits the Pittee about twenty miles from the

sea, which it enters below the latitude of 24° 30′. It is narrower than the Pittee, and in every respect an inferior branch, for there are sand-banks in its mouth which overlap each other, and render the navigation intricate and dangerous. We found it to have a depth of six feet on its bar at low tide, and fifteen at full, but when once in its channel, there were three fathoms water. At its mouth it is but three hundred yards wide, and higher up contracts even to fifty, but it has the same depth of water everywhere till it joins the Pittee. The Pieteeanee runs nearly north into the land, and from its shorter course the tides make sooner up it than the Pittee, which frequently occasions the singular circumstance of one branch running up and the other down at the same time.

Connected with these two mouths of the Indus, there are three inferior creeks called Koodee, Khow, and Dubboo. The two first join the Pittee, and Koodee was in former years one of the great entrances to Darajee; but its place has been usurped by the Pieteeanee, and it is now choked. Dubboo is only another entrance to the Pieteeanee.

However accessible these two branches have been found, yet neither of them are navigated by any other than flat-bottomed boats, which carry the entire cargo to and from the very mouth of the river, inside which the sea vessels anchor. It was an unheard-of occurrence for boats like the four that conveyed us (none of them twenty-five tons in burthen) to ascend so high up the Pittee as they did, but assuredly we encountered no obstacles.

Of the seven mouths that give egress to the waters of the Sata or eastern branch, the Jooa, Rechel, and Hujamree, lie within ten miles of each other. One of these mouths has been at all times more or less navigable, and while they are the estuaries of the waters of the Sata, a portion of those thrown off by the Buggaur reaches them by inferior creeks during the swells, forming an admirable inland navigation through all parts of the Delta. The mouths of the Jooa and Rechel are choked, but the latter was, up to a late period, the most frequented of all the mouths of the Indus. It was formerly marked by a minaret, which has, I suppose, fallen down, as this fact is particularly mentioned by our early navigators. There is a village near its mouth called "Moonara." The Hujamree is now accessible to boats of fifty tons. Its port is Vickur, twenty-five miles from the sea, which, with Shah-bunder, (still farther eastward,) seems alternately to engross the trade of the Delta. This season Shah-bunder is scarcely to be approached, and the next season Vickur will perhaps be deserted. We entered the Indus by the Hujamree mouth, and disembarked at Vickur. At the bar we had fifteen feet water at high-tide, and a depth of four fathoms all the way to Vickur, even when the tide was out.

The Khedywaree is the next mouth eastward of the Hujamree, with which it is connected by small cuts; it is shallow and not much frequented unless by boats to cut firewood.

Of the remaining mouths of the left arm, the next is Gorah, the largest of all the estuaries. It derives its supply of water direct from the Sata, which near the sea feeds numerous creeks, and is named Wanyanee. When ascending the Hujamree, we passed by a narrow creek into this mouth of the Indus. The Gorah (or as it is also called towards the sea, Wanyanee) has a depth everywhere of four fathoms. It does not exceed five hundred yards in width, and runs with great velocity; its course is somewhat crooked, but it pursues, on the whole, a southerly line to the sea, and passes by a fine village on the left bank, called Kelaun. Though the Gorah possesses such facilities for navigation, yet it is not to be entered from the sea by the smallest boats, in consequence of a dangerous sand-bank to which I have before alluded. It is clear that such sand-banks are thrown up by the impetuosity of the stream, for the Rechel, till it was deserted by the great body of the Indus, had as large a bar as is now opposite Gorah, and this has entirely disappeared with the absence of the fresh water. This branch of the Indus was open last century to large boats, and an English built vessel of seventy tons now lies up on dry land, where it has been left by the caprice of the river.

Below the Gorah, we have the Khaeer and Mall mouths communicating with it. All three disembogue within twelve miles of each other. The Khaeer, like the Gorah, is unnavigable. The Mall is safe for boats of twenty-five tons, and being the only entrance now open to Shah-bunder, is therefore frequented. The boats anchor in an artificial creek, four miles up, called Lipta, and await the flat-bottomed craft from the port, distant about twenty miles north-east.

About five-and-twenty miles below Mall, we meet the Seer mouth of the Indus, but have salt instead of fresh water. There are several minor creeks which intervene, but they do not form a communication. The Seer is one of the destroyed branches of the Indus. A dam has been thrown across it below Mughribee, fifty miles from its mouth, and though it ceases to be a running stream on that account, yet the superfluity of fresh water from above forces for itself a passage by small creeks, till it regains the Seer, which thus contains fresh water twenty miles from its mouth, though it is but a creek of the sea. The river immediately below Mughribee is named Goongra, higher up it is called Pinyaree, and leaves the parent stream between Hyderabad and Tatta. The Seer is accessible to boats of one hundred and fifty candies (thirty-eight tons), to a place called Gunda, where they load from

the flat-bottomed boats of Mughribee. With some extra labour these same boats could reach the dam of Mughribee, and from that town the inland navigation for flat-bottomed boats is uninterrupted to the main Indus, though it becomes irksome in the dry season. The dam of Mughribee is forty feet wide. The Seer, at its mouth, is about two miles wide, but it gets very narrow inland; within it has a depth of four and six fathoms, but below Gunda there is a sand-bank with but one fathom water on it. There is a considerable trade carried on from this branch of the Indus with the neighbouring countries of Cutch and Kattywar, for rice, the staple of Sinde, which is to be had in abundance at Mughribee.

The Koree, or eastern branch of the Indus, completes the eleven mouths of the river. I have little to say regarding it. It once discharged a portion of the waters of the Fulailee, which passes Hyderabad, as also of a river that quits the Indus near Bukkur, and traverses the desert during the swell; but it has been closed against both these since the year 1762, when the Sindias threw up bunds or dams, to inflict injury on their rivals the inhabitants of Cutch. Of all the mouths of the Indus, the Koree gives the grandest notion of a mighty river. A little below Lukput, it opens like a funnel; and at Cotasir is about seven miles wide, and continues to increase till the coasts of Cutch and Sinde are not visible from one another. When the water here was fresh, it must have been a noble stream. The depth of this arm of the sea (for it can be called by no other name) is considerable. We had twenty feet of water as high as Cotasir, and the channel continues equally deep to Busta, which is but eight miles from Lukput. A Company's cruizer once ascended as high as Cotasir, but it is considered dangerous, as there is an extensive sand-bank at the mouth, called Adheearee, on which the water is only knee-deep at low tides. There are also several sand-banks between it and Cotasir, and a large one opposite that place. The Koree does not communicate with the Seer, or any other mouth of the Indus, but sends off a back water to Cutch, and affords a safe inland navigation to small craft from Lukput to Juckow, a port on the Indian Ocean, at the mouth of the Gulf of Cutch.

The Sindians, it will therefore appear, have destroyed both the eastern branches of the Indus, and yet managed to reap advantages from the navigation of one of them, as well as from the irrigation. There being no communication by water between Sinde and Koree, but little of the trade of that country is exported by it. It finds a vent by the Seer, but this has not given rise to any new town being built on its banks; indeed, such is their humidity

that they are only tenable for a part of the year by the tax-gatherers of Mughribee.

The sea abreast of the Indus is shallow, but the soundings are regular, and a vessel will have from twelve to fifteen feet of water a mile and a half off shore. The Gorah bank causes the only difficulty to the navigation of the coast from Mandvee to Curachee. Breakers are to be traced along it for twelve miles. The sailors clear it by stretching at once out of sight of land, and keeping in twelve fathoms water till the danger is past: they even state that a vessel of twenty-five tons would be wrecked on a course where the depth is ten fathoms. This bank is, however, much resorted to by fishermen, and may generally be distinguished by their boats and nets.

The coast of Sinde, from its entire exposure to the great Indian Ocean, is so little protected against storms, that the navigation is much sooner suspended than in the neighbouring countries. Few vessels approach it after March, for the south-west monsoon, which then partially commences, so raises the sea, that the waves break in three and four fathoms water; while the coast is not discernible from its lowness till close upon it, and there is a great risk of missing the port, and no shelter in such an event.

The tides rise in the mouths of the Indus about nine feet at full moon; and flow and ebb with great violence, particularly near the sea, where they flood and abandon the banks with equal and incredible velocity. It is dangerous to drop the anchor unless at low water, as the channel is frequently obscured, and the vessel may be left dry. The tides are only perceptible seventy-five miles from the sea, that is about twenty-five miles below Tatta.

The waters of the Indus are so loaded with mud and clay, that they discolour the sea for about three miles from the land, but yet they do not so much predominate as to change the water to fresh anywhere but at the Gorah mouth during the floods. Floating out from the Indus are to be seen numberless brown oily specks, which are called *pit* by the natives: on examination I found them to be round globules filled with water, having a brown skin, and very like a small egg without the shell; when placed on a plate they were about the size of a shilling, and were easily burst. The natives informed me that they were detached from the sand-banks by the sea and river water joining, and then floated out. They give a particularly dirty and oily appearance to the water, and always denote the presence of fresh water among the salt.

It is difficult to imagine a more miserable country than the low tracts at the mouths of the Indus. When out at sea land is barely to be distinguished at the distance of a league; not a tree

is to be seen, though the mirage often magnifies the stunted shrubs which fringe the coast, and gives them a tall and verdant appearance; but this delusion vanishes with a nearer inspection. The tide overflows the banks of all the mouths, and recedes to leave a desert dreary waste. If a vessel be unfortunately cast on this coast, she is buried in two tides, and the greatest exertion can hardly save a cargo. We had proof of this in an unfortunate boat which stranded near us: and, to add to the miseries of this land, the rulers of it, by a barbarous law, demand everything which is cast on shore, and confiscate any vessel which from stress of weather may enter their ports.

The trade by the Indus is such as an evil government might lead one to expect. Excepting the rice produced on its own banks, there are in fact no exports whatsoever; and the merchandise that is brought into the country is landed at Curachee. It may appear remarkable that this port should thus be the principal one of Sinde, when its rulers are also in possession of the Indus; but this is easily explained. Curachee is only fourteen miles from the Pittee or western mouth of the Indus, and there is less labour in shipping and unshipping goods there than were they carried by the river, from Darajee or Shahbûnder, in flat-bottomed boats. Curachee can also throw its imports into the peopled part of Sinde without difficulty, by following a frequented and good level road to Tatta. The unshipment, too, at that port supersedes the necessity of embarking the cargo first in flat-bottomed boats; and the actual distance between Curachee and Tatta (about sixty miles) is half exceeded by following the windings of the stream to any of the bunders in the Delta. As the ports in the river and Curachee are both subject to Sinde, it is conclusive that the sea-port has advantages over those of the river, which have led to their being forsaken by the navigator. In former years, before Curachee was seized by the Sindians, the exports from the Delta were more considerable, but since then all articles of value are brought to Curachee by land, and there shipped; and the opium, in particular, from Malwah, is never put into a boat, but to cross the Indus on its way to Curachee.

The boats of the Indus also claim attention. Including Curachee and all the ports of the country, there are not perhaps a hundred dingies or sea-vessels belonging to the dominions of the Ameer. These are of a peculiar construction, sharp-built, with a very lofty poop; the large ones never ascend the rivers, and are principally used at the bunder of Curachee, sailing from that port to Muscat, Bombay, and the Malabar coast. They carry no guns. A vast number of smaller dingies are also used at the mouths of the Indus, chiefly for fishing. They are good sea-boats, and sail very fast.

The traffic on the river, however, commencing from its very mouth, is carried on in flat-bottomed boats, called doondees. These boats are large and unwieldy; never exceeding one hundred kurwars (fifty tons), and drawing, when laden, about four feet water. They have two masts, the larger forward, and hoist their sails behind. The foresail is of a lateen shape; that aft is square and very large: with these set, they can stem the current, with a good wind, at the rate of three miles an hour. When the wind fails, they are dragged or pushed up by spars against the stream. With ropes they can be pulled at the rate of a mile and half per hour. The helm is shaped like the letter P; and, in the larger vessels, is managed by ropes from each side: at a distance it seems quite detached from the doondee. These vessels are also furnished with a long supple oar astern, which is worked backwards and forwards, the steersman moving it on an elevated frame:—it reminded me of what is called sculling. It is possible to impel the doondee with this oar alone, and nothing else is used in crossing the different ferryboats. When coming down with the stream, this oar is also in requisition; and they work it to and fro, to keep the broad side of the vessel to the current. In descending the river the masts are invariably struck, and the helm even is stowed away. I can compare these boats to nothing so correctly as the drawings of Chinese junks; the largest are about eighty feet long, and eighteen broad, shaped something like a ship, high astern and low in front, with the hull slanted off at both ends, so as to present less resistance to the water. They are floating houses, for the people who navigate them take their families, and even their birds and fowls, along with them. All the boats on the river, large and small, are of the same description. In navigating the doondees, the boatmen always choose the shallow water, to avoid the rapids of the river.

On the Delta of the Indus.—Herodotus said of Egypt, that it was 'the gift of the Nile;' and the same may be said of the country at the mouths of the Indus. A section of the banks of the river shows a continued succession of earth, clay, and sand, in layers parallel to one another, and deposited, without doubt, at different periods. It would be hazarding too much to state that the whole of the Delta has been gradually acquired from the sea, but it is clear that the land must have greatly encroached on the ocean. Nothing is more corroborative of this fact than the shallowness of the sea out from the mouths of the Indus, and the clayey bottom and tinge of the water.

The country from Tatta, which stands at the head of the Delta, to the sea downwards, is in most parts influenced by the periodical swell of the Indus. The great branches of this river are of themselves so numerous, and throw off such an incredible number of

arms, that the inundation is general; and, in those places which are denied this advantage by fortuitous circumstances, artificial drains, about four feet wide and three deep, conduct the water through the fields. The swell commences about the end of April, and continues to increase till July, disappearing altogether in September. It begins with the melting of the snow in the Himalaya mountains. At other times the land is irrigated with the Persian wheel, which is turned by a camel or bullock, and in general use everywhere.

The Indus first throws off its branches about sixty miles from the sea, and each of the sides of the triangle is about one hundred British miles in length.

The base of the Delta, extending for one hundred and twenty-five statute miles, faces the ocean. It may thus be said to contain an area of seven thousand square miles; one-eighth of which, perhaps, may be occupied by beds of rivers and inferior streams.

But singular as it may appear, this valuable expanse of fertility lies nearly neglected. Not a fourth part of the land is brought under cultivation; and instead of aspiring to agriculture, the people mostly pursue a pastoral life. The Delta of the Indus is therefore overgrown with tamarisk and other wild shrubs; and instead of fields we find a hard caked surface of clay, cracked by the heat, and of a most miserable and barren description. This neglect originates in an evil government, for it requires little or no labour on the part of the husbandman to prepare the land, and the seed, scattered without care or attention, yields a plentiful harvest. Heavy taxation and oppression hold out no encouragement even where so little energy is required.

In a tract peopled by a pastoral race, there are, as may be expected, few permanent towns or villages. When we except Darajee, Vikkur, Shah-bunder, Mughribee, and one or two others, the inhabitants reside in temporary villages, called by them "raj," which they remove at pleasure; and their huts are constructed of reeds and mats made from rice-straw, each being surrounded by a grass "tatty" or fence, to exclude the cold wind and humid vapours which prevail in this low country, and are considered noxious. These are the houses remarked by Nearchus, and are, I believe, peculiar to the river Indus. They very much resemble the huts of dancing girls in India.

It becomes a difficult matter to form any correct opinion as to the number of inhabitants in such a country, where the body of the people are wanderers, and not confined to narrow limits. Huts are, however, to be seen everywhere, and, excluding the city of Tatta, the population cannot be rated at less than thirty thousand souls; of this estimate, one-third may be composed of those

who reside in the fixed towns. This census gives four and a half to the square mile.

The erratic tribe in the Delta of the Indus is called Jut; these people are the aborigines of the country; they are a superstitious race of Mahomedans, and exceedingly ignorant. The different banks of the rivers are peopled by watermen, of the tribe of Mooana; they are emigrants from the Punjab, and are employed in navigating the boats or in fishing in the sea or river. There is also another tribe from the same country, called Seik Labana, whose occupation it is to make reed mats. They also kill wild animals and game; but are held in no estimation by the rest of the people. Jookeeas or Jokreeas, an aboriginal race from the mountains over Curachee, are to be found, but they are not numerous. Some of their chiefs have land assigned to them. There are also a few Belooches. Of the fixed population there is little to remark; it is chiefly composed of Hindoos of the mercantile caste, who carry on the commerce of Sinde with the neighbouring countries. They do not differ from their brethren in India.

The only tribe which calls for further comment is that of Jokeea; these people are the descendants of the Sama Rajpoots, who governed Sinde in former years. They became converts to the faith when the Hindoo dynasty was subverted, and still retain the Hindoo name of their tribe, and claim consanguinity with the Jhareja Rajpoots of Cutch. They are mountaineers from the west bank of the Indus, not very numerous, and little favoured by the government. They can bring two thousand men into the field.

The fisheries in the river, and out from its different mouths, are extensive; they are carried on by hook chiefly, and some of the fish caught are of enormous dimensions. One species, called Kujjoonee, is killed for its sounds, which, with the fins of small sharks that abound near the Indus, form an article of export to China. The river fish are likewise abundant; of these the most remarkable is the "pulla," which in flavour fully equals the salmon. It is only found during the four months that precede the swell of the river.

I am not aware that there are any animals peculiar to the Delta of the Indus. Camels are numerous and superior; buffaloes are reared in great numbers; horned cattle and sheep abound; the dog, too, is here elevated to his proper situation, and is an humble attendant on man,—they watch the flocks, and are of a ferocious description, swimming the rivers with great vigour and dexterity.

The staple production of the Delta of the Indus is rice; it is to be had of many different kinds, but its value seems to depend on its preparation for the market. Bajra, and all other Indian

grains are raised. From extensive plantations of cane, goor, a coarse kind of sugar, is produced; this plant, with wheat, barley, and moong, is obtained by irrigating the fields by cuts from the river, some months before the periodical swell; and forms what may be called a second crop. Saltpetre is found in the Delta, but it is not now exported, though formerly an object of commerce to the East India Company.

The climate of this part of Sinde is sultry and disagreeable, the thermometer ranging as high as 90° in March; and the soil is a rich alluvium, yet the dust blows incessantly. The dews, too, are very heavy and dangerous. It is in every respect a trying country to the human constitution, and this was observable in the premature old age of the inhabitants; but I could not hear of their being subject to any marsh fever or other evil effects from the inundation, their complaints being confined to the inconvenience and annoyance they suffered from insects and musquitoes generated by the mud.

The Indus from Tatta to Hyderabad.—From the city of Tatta, which stands at a distance of three miles from the river, we cease to have the Indus separated into many channels. On the right bank it is confined by low rocky hillocks; and on the left there is but one narrow branch, the Pinyaree, which is accessible to boats from the town of Mughribee, when the superfluous water of the floods follows its course to the sea. Yet the greatest width of channel to be found in this part of the Indus is less than half a mile. At Hyderabad it is but eight hundred and thirty yards; at Tatta, it is seven hundred; and below the village of Hilaya, fifteen miles from that town, it does not exceed six. The greatest depth of water is found opposite the capital, and is five fathoms; the least at Tatta, where it is but fifteen feet: generally, there is a depth of twenty feet.

The channels of the Indus within the Delta are free from sand-banks; but from Tatta to Hyderabad these are met everywhere, and as the banks of that section of the river are more frequently shelving than steep, it is difficult to discover the deep channel, and the navigation is thus perplexed. Many of the sand-banks are but knee deep in the water, and they are constantly shifting their position; but the current being less rapid than near the sea, they are rarely swept away. In several places they have become islands of sand, and divide the stream into two channels, one of which is always found navigable. The subdivision of the river has occasioned many of these branches being given as separate rivers in our maps, but, as I have before stated, none such exist excepting the Pinyaree. In the floods there is a narrow channel above Triccul, which communicates with the Fullalee branch which insulates Hyderabad at that season.

The distance by land from Tatta to Hyderabad is less than fifty miles, nor do the windings of the stream increase it even by water to sixty-five; its course is southwest and by south, and rather direct, with one decided turning below Jurruk, where it throws off the river leading to Mughribee. We made the voyage against the stream in two days.

Not above a dozen places exist between Tatta and the capital; the only one of note being Jurruk, situated near some low rocky hillocks, which does not boast a population of fifteen hundred souls. None of them are fortified.

The country, which might be one of the richest and most productive in the world, is devoted to sterility. Hunting preserves, or as they are called "shikargahs," follow one another in such succession, as to leave no land for tillage; and the fences which confine the game, approach within a few yards of the Indus. The interior of these preserves forms a dense thicket, composed of tamarisk, saline shrubs, and other underwood, with stunted trees of bauble, which are never allowed to be pruned or cut, so that the banks of the Indus, were they in the hands of a formidable enemy, afford cover, from which an expedition, conducted by water, might be constantly and grievously harassed. The roads through this tract are equally close and strong. Supplies are, however, abundant. Grain is cheap and plentiful everywhere; and Tatta and Hyderabad are the ancient and modern capitals of the country.

Of Hyderabad, I can add little to the accounts already on record. It does not contain above twenty thousand souls, who live in houses scattered about a rock. The fort, which is built on this rocky hillock, is a mere shell, with a single wall about twenty-five feet high, partly surrounded by a dry ditch, ten feet wide and eight deep, over which is thrown a wooden bridge. It is of brick, and a place of no strength, fast going to ruin; there is a massy tower in the centre of it, which overlooks the surrounding country, but is not connected with the works; in it lies deposited the wealth of Sinde. The houses in the interior are constructed of mud, and those of the ameers even are mere hovels. The place could easily be captured by escalade. Hyderabad stands at a distance of three miles from the Indus; the Fullalee river, which passes eastward of it, was quite dry, when we visited Hyderabad; but it is a considerable stream when the swell sets in. The very island on which the capital stands is left uncultivated, and there are several rocky ridges on it which would materially impede agricultural operations.

The soil near Tatta is more productive, and its gardens give abundant evidence of their fertility. The vine is successfully reared in them, as also the fig and pomegranate; apple-trees are

in abundance, and though the fruit is naturally small, it increases in size with cultivation. In the fields may be seen indigo, tobacco, sugar-cane, with wheat, barley, and all the other Indian grains; but it is the singular policy of the rulers of Sinde to keep everything in a state of nature, that their territories may not excite the cupidity of surrounding states. Agriculture and commerce are alike depressed.

With regard to the trade of the country, it may be said that there is little or none anywhere but at Curachee. The Indus is as if it existed not, no advantage being taken of it to convey goods to Hyderabad. The imports are landed at Curachee, and the most valuable export, which is Malwah opium, is shipped from the same port. The merchants in prosecuting their journey to Candahar and the upper provinces of the Indus, quit the Sindian territories with all despatch. The only encouragement which the chiefs give is to the trade in opium, on which they levy the exorbitant duty of two hundred and fifty rupees on each camel load; and the revenue from this article alone amounted last year to seven lacs of rupees, a sum equal to the land revenue of the Hyderabad Ameer. Nor does any hope exist of improving or increasing commercial intercourse by this river, until the rulers of it have more just notions of policy, and some one of them, more enlightened than his predecessors, discovers that the riches and capabilities of a country can only be developed by encouraging the people in industry and art. At present there is no wealth in Sinde but what is possessed by its rulers, and had the people the inclination, they have not the means of purchasing the manufactures of Europe. The case was otherwise in the beginning of this century, when the East India Company traded at Tatta by a factory, and the rulers, intimidated by their lord paramount in Cabool, did not object to the transit of goods to that and other countries. Sinde, however, must follow the fate of that portion of Asia; and if any of the Douranee family be yet able to seize the lost crown of Cabool, we may expect a change for the better in their dependent province at the mouths of the Indus.

At present there are not vessels sufficient for any considerable trade; between the capital and Tatta, they do not exceed fifty—many of them small and used for fishing—others old and worn out, which cross the stream in certain places as ferry-boats. Encouragement would soon remove this, which may be considered a defect in a military as well as a commercial point of view.

From Hyderabad to Sehwun.—The town of Sehwun stands at a distance of two miles from the west bank of the Indus, and is exactly one degree of latitude north of Hyderabad, being crossed by the parallel of 26° 22′; the voyage to it is performed in eight days, against the stream, and the distance is 105 miles.

The river in this part of its course is named " Lar," which in the Belooch language means south; it flows about S.S.E., being resisted at Sehwun by rocky mountains, which change the direction of the stream. Its banks are very low, and the country bordering on them is frequently overflowed, particularly on the eastern side; the western bank is firmer, but never exceeds eight feet in height. This expansion of the river diminishes its general depth to eighteen feet; during the swell the increase is twelve feet additional, the width being then frequently one thousand yards and upwards. About six miles above Hyderabad, however, the river divides into two channels, one of which is fordable, and the other only four hundred yards wide. At Sehwun, too, the rocky buttress of the Lukkee mountains hems the waters into a channel of five hundred yards, but the depth is nearly forty feet, with a rapid current.

The river throws off no branches in this part of its course, excepting the Fulialee, which leaves the Indus twelve miles above Hyderabad, and passes eastward of that city; it is only a stream during the swell. It was dry at Hyderabad when we were at that city, and but one hundred yards wide, and knee-deep, where it separated from the Indus; yet it is a considerable river in the wet season, and fertilizes a vast portion of Sinde by its water, which it may be said to exhaust between Hyderabad and Cutch. The maps give most erroneous ideas of the Indus, for the numerous branches which appear in them to leave the river, are mere watercourses for the periodical swell; many of them artificial, dug for the purposes of irrigation. The river for nine months runs in one trunk.

The current never exceeds three miles an hour in this part of the Indus, unless where confined, when its rapidity undermines the banks, and carries whole villages along with it. The town of Majinda and Amree, on the right bank, have both been swept away, the former no less than eight or ten times within the last twelve years; but the people retire a few hundred yards, and again erect their habitations. Hala, on the eastern side, has shared a like fate: but the channel of the river lies to the westward, where the banks are more steep; and the left bank of the river, though consisting of a flat field of sand, is only inundated in the swell. At that period, for eight miles eastward of the Indus, it is not possible to travel, from the number of shoots cast off. The Indus itself is here pretty constant in its course; and though the country eastward would, as I have observed, favour the escape of the water in that direction, it clings for some time to the Lukkee mountains.

Of the country and towns which intervene between Sehwun and the capital, a few words will suffice. There are none of any size

but Sehwun itself: Muttaree, sixteen miles from Hyderabad, contains about four thousand people; and Halla Bagan, Majuida, and Leu, about two thousand each. The other places are few, and thinly peopled,—three or four of them have frequently one name. The country is consequently neglected, and the banks of the river are in most places covered with tamarisk; but towards the hills it is open. Cotton, indigo, wheat, barley, sugar, tobacco, &c., are produced by irrigation in the dry season; but the limited extent of the cultivation may be discovered by there being but one hundred and ninety-four wells or cuts from the river on one side of the Indus, between Hyderabad and Sehwun, a distance of one hundred miles, where the greater part of the soil is rich and cultivable. In a few places the land is salt and sterile. Rice is produced during the swell; and yet provisions are dearer here than in the neighbouring and less favoured country of Marwar. The people chiefly live on fish and milk.

The town of Sehwun alone bears the marks of opulence in this portion of Sinde, and it is indebted for its prosperity to the shrine of a holy saint from Khorassan, by name Lal Sah Baz, whose tomb, a handsome building inside the town, is a place of pilgrimage both to Hindoo and Mussulman: it does not, however, contain a population of ten thousand souls. It is sometimes called Lewistan, or Sehwun, but rarely. It is a place of great antiquity; and is commanded on the north side by a most remarkable castle, now in ruins. The town itself stands on a rising ground, and there are innumerable mosques and tombs in the neighbourhood, which prove its former wealth. It has a well-furnished bazaar; but the place has gradually gone to decay since it ceased to be the residence of a governor. A branch of the Indus, called Arrul, runs immediately past the town in its course from Larkhanu; but this will be described afterwards. Four years since, the Indus itself passed close under Sehwun, but it has retired eastward, leaving a swamp on all sides of the town.

Around Sehwun the country is rich and productive. Looking north, the eye rests on a green plain, highly cultivated. Mulberries, apples, melons, and cucumbers, were brought to us; and, for the first time, we saw grain. The melons are tasteless,—I presume, from the richness of the soil. Cucumbers grow nowhere in the country except at Sehwun. The climate is considered sultry and disagreeable, and we certainly found it so, for the thermometer rose to 112° in April, and continued as high as 100° till nine at night. The hot winds were also very oppressive.

The castle of Sehwun is a most singular building; it consists of a mound of earth, sixty feet high, which is surrounded from the very ground by a wall of burnt brick. It is of an oval shape, twelve hundred feet long by seven hundred and fifty in diameter.

The interior is a heap of ruins; and without the remains of a building two feet high: the whole surface is strewed with broken vessels and bricks. The gateway lies on the town side, and has been arched; it is in a better state of preservation than any other part of the works: from the section through the hills which it lays open, the whole castle is clearly an artificial mound of earth. The river Arrul passes close under the base of the ruin.

The natives could give me no satisfactory account of this ruin; they attributed it to the age of the fairy Budurool Jumal, whose agency is referred to in everything ancient or inexplicable in this land. Ferishta, however, mentions that Sehwun was besieged by Humeron in 1541, and that emperor, being unable to take it, fled, on his disastrous rout, by the desert to Omerkote-Akliers. General Mirza Khan likewise attacked it in 1591; but Jani the rebellious governor of Sinde, held out for seven months against the emperor's army, so strong was the fort of Sehwun in those days: since then, its walls being dismantled, it has been allowed to go to wreck. The natives brought many coins of the reign of Akber, both silver and copper, but among thirty I could find no traces of the Greek alphabet.

It must be confessed that a ruin of such magnitude, standing, as it undoubtedly does, on the track of Alexander, would fully authorize our fixing on it as one of that conqueror's captures. In appearance it very much resembles Mujilibe, or (overthrown) tower, described in Mr. Rich's Memoir of Babylon, for it presents a most chaotic sight. Quintus Curtius mentions, that in the territories of Sabus-Rajah, Alexander took the strongest city by a tunnel formed by his miners. Now this ruin stands on the very verge of a navigable branch of the Indus, and if by a tunnel we are to infer that he dug in from the river, this is probably the very city, where "the barbarians, untaught in engineering, were confounded when their enemies appeared almost in the middle of the city, rising from a subterraneous passage, of which no trace was previously seen." The position of Sehwun coincides with that of the territories of Sabus Rajah, and it is not to be supposed that the rulers of the country would, in after times, neglect a place of such strength as Sehwun, which doubtless led to its being kept up as a fortification under the Mogul Emperor. The saint Lal Sah Baz was interred at Sehwun, thirty-five generations back, or about six hundred years ago; and the people universally point to a period much beyond that for the age of their castle.

In addition to the remains of Sehwun, there is a mound eighteen miles lower down, and on the same side of the river, near the village of Amree. The natives believe it is the site of an old city, and to have been the favourite abode of one of the rulers of the land; at which a king, once halting with his army, ordered the

horse-dung of his cavalry to be collected in a heap, and hence arose the mound of Amree. It is certainly an artificial heap of earth of the same kind as Sehwun, but it is not forty feet high, and too confined to be the remains of a city. Portions of the village of Amree have been swept away by the river, which may have diminished its size, or it may be a tumulus only. There are some tombs at this village, but they are not of a later date than Madad Khan's invasion in the end of last century. Amree was formerly a large town.

The Lukkee mountains, which lie west of the Indus, run south from Sehwun to near Curachee, gradually diverging from the river; they come in sight at a distance of twenty miles from Hyderabad. They appear to be of porphyry, are very bare of vegetation, and much furrowed by water-courses, all of which present the concave side towards the river. They have an elevation of about one thousand feet in the highest parts, which are flat and not conical. On this range, about fifteen miles from Majindu, on the Indus, stands the fortified hill of Runna, a place of strength in former times, but till lately neglected. It is said to be eight miles in circumference, and to be well supplied with water when there is none in the neighbourhood. The Amrees have lately repaired it at considerable expense; but, from what I can understand, its strength chiefly consists in the absence of water from the bleak mountains which surround it. There is a hot spring at the base of the mountains, near the village of Lukkee, adjoining one of the most cold description; and a spring of the same kind exists at the other extremity, near Curachee, so that they are probably to be met in the intervening part. The spring at Lukkee is a place of pilgrimage to the Hindoo, and its waters are considered a specific in cutaneous disorders.

The Indus from Sehwun to Bukkur.—The insulated fortress of Bukkur is situated on a rock in the Indus, between the towns of Roree and Sukur. It is a degree and twenty minutes north of Sehwun, being in lat. 27° 42′, and in longitude it is fifty-six miles eastward of that town. The distance by the river amounts to one hundred and sixty miles, and was traversed by us in nine days.

Throughout the whole distance the Indus flows in a zigzag course, nearly S.W., till it is impeded by the Lukkee mountains below Sehwun. The intervening country is richly watered by its meanderings, and from the lowness of the banks, is disputed by the river and its ramifications, and formed into numerous islands of the richest pasture. On the least approach of the swell both banks are inundated and irrigated.

About twenty-five miles below Bukkur, the Indus sends forth to the westward a branch called Nara, which washes the base of

the Hala, or mountains of Beloochistan, and after pursuing a parallel course of many miles, rejoins the river at Sehwun. Its waters are courted and distributed by canals, which add to the blessings bestowed by nature on this flat and fertile land. The eastern bank, though less favoured than the opposite one, is highly cultivated, and most of the towns and villages stand on the verge of canals, which bounteously distribute the waters of the periodical swell, and attest the industry and assiduity of the inhabitants.

The river here but rarely flows in one undivided stream, and with a width of three-quarters of a mile in some places, preserves a depth of fifteen feet in its shallowest bed. There is nothing approaching to a ford in any part of its course. The declivity on which the Indus runs to the ocean must be gentle, for it glides sluggishly along at less than two and a half miles in the hour. From Sehwun upwards, the Indus is called "Sira," which means north, in distinction from the southern portion, which is called "Lur." Mehraun is a foreign term, with which the natives are not acquainted.

The immediate vicinity of the Indus in this part is alike destitute of beauty and inhabitants. It is overgrown with tamarisk shrubs, and the villages are purposely built at the distance of two or three miles, showing the frequent occurrence of inundations; yet there were a hundred wheels at work on the verge of the river. The eastern bank from Sehwun to Bukkur is by far the best-peopled portion of Sinde; and the inhabited places which occur are numerous and thriving, and though not large and wealthy, many of them have five hundred houses. This territory is subject to the chief of Khyrpoor, and is enriched by a canal forty feet broad, called "Meerwah," which conducts, by a southerly course, the waters of the Indus, from the neighbourhood of Bukkur, to a distance of ninety miles, where they are lost in sands or deposited in the fields. There are also various other canals besides this one, and while their banks are fringed with villages and agriculture, they likewise afford the means of transporting by boats the produce of the soil. In the fair season, when dry, they become the beaten foot-paths of the people, and are excellent cart-roads, preferred at all times to the common pathway, which, from the exuberance of vegetation in this rich country, is generally impeded by bushes.

The western bank of the Indus, which is intersected by the Nara, is called Chandkoh, from a Belooch tribe of that name, and yields the greater portion of the land revenue of the Hyderabad Ameers. This branch, which leaves the Indus below Bukkur, in the latitude of Larkhanu, in its passage to the main stream, forms a small lake called Munchar, which abounds in fish. Far-

ther down, it changes the name of Nara into Arrul, before falling into the Indus. It is a narrow river, about a hundred yards broad, and only navigable during the inundation. Numerous cuts, the chief of which is the Larkhanu canal, extend the cultivation beyond its banks ; and in addition to the swell of the Indus, this pergunna is watered by rills from the lofty mountains to the westward. The lake of Munchar is environed by fields of wheat in the dry season, when its waters partially subside and leave a rich mould exposed to the sun.

The fortress of Bukkur is constructed of brick on a low rock of flint, at a distance of four hundred yards from the left bank of the Indus, and about three hundred and fifty from its western side. Its walls are loop-holed, flanked with towers, and slope to the water's edge ; they do not exceed twenty feet in height. There is a gateway on each side of the fortification, facing Roree and Sukur, and likewise two wickets. The interior of the works is crowded with houses and mosques, many of which, as well as parts of the rock itself, appear above the wall. In shape, it approaches to an oval, and is about eight hundred yards long, and three hundred in diameter. At some places the rock has been pared and scarfed, but Bukkur has no strength in its works, and is formidable only from its position. The garrison consists of one hundred men of the Khyrpoor Ameer, and there are fifteen pieces of artillery, few of which are serviceable. Four fathoms are found on both sides of the island, but the eastern channel becomes shallower in the dry season, and is said to have been once forded. The navigation of the Indus at Bukkur, is dangerous from eddies formed under the fortress itself, and several other rocky islets below it; but the watermen are considered the most experienced in Sinde, and as a boat never attempts to pass up or down without a pilot, but few accidents happen.

The town of Roree, which faces Bukkur, stands close on the bank of the Indus, on a flinty precipice, forty feet in height, over which the houses tower. The inhabitants of some of these can even draw up water from their windows; but a road cut in the rock down to the edge of the river, at a place where it does not approach the precipice, supplies the citizens of Roree with this necessary of life, without risking their lives. This is the point of embarkation for those passing to Bukkur, but a landing would be difficult and dangerous when the river is high. The town of Roree has about eight thousand inhabitants, chiefly Hindoos. To the eastward of it several detached hillocks of flint present a most bleak and barren appearance, but add to the strength of the country; beyond their limits a grove of date trees extends for three or four miles to the southward of the town, shading numerous orchards and gardens. Sukur, which stands opposite Roree,

is about half the size of that town; both have been considerable places in former years, and the ruins of minarets and mosques remain. The bank of the river at Sukur, is not precipitous, and the town runs in from it, instead of extending, like Roree, along its banks. These two towns, doubtless, owe their position to Bukkur, which in troubled times added to the courage and hopes of the inhabitants.

Roree, Bukkur, and Sukur, rose on the ruins of Alore, which are yet to be discovered on a rocky ridge, four miles distant, to the S.S.E. That town was the capital of Sinde, and ruled by the Dilora race, named Dhur bin Chuch, when Mahomed Cassim invaded India, in the seventy-third year of the Hejira, (A.D. 692) in search of ornaments for the seraglio of the caliph. The ruler of Alore was slain by the invader, and his kingdom, which is said to have extended from Cashmere to the ocean, fell before the Mahomedan arms. The Chagtye emperors supported for a time the fortress of Alore, from its reputed strength, but it is now reduced to a humble hamlet with some ruined tombs. A low bridge with three arches, named the "bund of Alore," constructed of brick and stone, alone remains of all its greatness. It is thrown across a valley, which in bygone years formed the bed of a branch of the Indus, from which its waters fertilized the deserts, and reached the sea by Omercote and Lucput. In any great inundation, the water still finds egress by this channel, which is named Nora by the inhabitants.

The only modern towns of note which require remark, are Khyrpore and Larkhanu, nearly under the same parallel of latitude, both distant from it about fourteen miles, and watered by canals from the Indus. Khyrpoor is a modern town, built by the Talpoor chief Sohrab, who seized on the northern part of Sinde, after the subversion of the Coloras. It contains a population of about fifteen thousand souls, but is merely a collection of mud hovels heaped together in narrow lanes. It is destitute of fort or defence, unless a mud wall about a foot thick, which surrounds the houses of the Ameer and his family, can be so considered. The country near it is flat and bushy, and a low dyke has been drawn round the town to keep the inundations of the river at a distance. Larkhanu, which stands on the western bank, is the capital of the pergunna of Chandkoh; it has about ten thousand people, and is the head-quarters and rallying point of the Sinde Ameers, on their N.W. frontier. It has a small mud fort; and an insufficient train of artillery, about twenty in number, frightens the refractory in the neighbouring mountains, and maintains the peace of Sinde. It is governed by a Nuwab, the individual next in rank to the rulers of the land.

The productions of Sinde are very similar in different parts of

the country, and the same kinds of grain are produced here as at Sehwun. A shrub very like wall-flower, called "syar," grows in this tract, the juice of which is considered a valuable medicine for the diseases of children. The wheat fields are invariably surrounded by a low dyke, like rice-ground—tobacco grows very luxuriantly near Roree. The greatest want in Sinde is grass, which is choked by the tamarisk; the people often set fire to these shrubs, and derive by such means an abundant crop. There are but few trees in Sinde. The baboul even does not attain any considerable size; the neem and firs, so abundant in India, are rarely seen, and the banian tree is a stranger. The shrubs thurr, the kejra, khair, bair, akra, (swallow-wort) and tamarisk, grow everywhere. I have alluded to the date-grove of Roree, and it is a tradition of the people, that this tree was brought into the country by Mahomed Cassim, who carried dates from Arabia as provision for his army, from the seeds of which have arisen the date trees so abundant in this part of Sinde. By the introduction of such a nutritive article of food, the Mahomedan compensated in some degree for the evils and scourge of his inroad.

The Indus from Bukkur till joined by the Punjab rivers.—The waters of the Punjab, united in one stream, fall into the Indus at Mittun, in the latitude of 28° 55′ N. From this point to Bukkur, the river pursues a southwesterly course, and is pretty direct in its channel, but frequently divided by sand-banks. Various narrow crooked branches here diverge from the parent stream, and retaining a depth of eight to fifteen feet of water, are navigated by boats ascending the Indus, in preference to the great river itself. They extend nearly throughout the whole intervening space now under review.

The Indus is widely spread in many parts of its course above Bukkur. It often exceeds a thousand yards in breadth, and at Mittun was found to be even double that width. The depth was not proportionably diminished, and in some places exceeded six fathoms, while four were to be found everywhere, though at a season when the waters are lowest. There was no greater acceleration of current than in the places already described; and the serpentine course just mentioned, proves the great flatness of this district of the country.

From Bukkur the Indus is navigated by a different description of boats from the "doondee" already noticed. They are called "zohruy," and are of an oblong square shape, rounded fore and aft, built of the talee tree, and clamped with pieces of iron, instead of nails, an operation which is performed with great neatness. The "zohruy" is also flat-bottomed, and has only one mast; some of them exceed eighty feet in length and twenty in breadth. They pass through the water quicker than the doondee, and are admir-

ably adapted to the transport of troops, both horse and foot, being as roomy forward as aft. They are not numerous, but we met ninety-five of them in our voyage to Mittun. I cannot understand by the description of boats which Alexander used for transporting his cavalry, any other than these zohruys; for Arrian describes them as of a round form, and says they received no injury when the long vessels were wrecked at the junction of the Hydaspes and Acesines. Their peculiar build is doubtless owing to the rapids which they have to traverse. We made the passage in these boats from Bukkur to Mittun, in nine days, a distance of one hundred and seventy miles by the river.

The country which this portion of the Indus traverses, is of the richest nature, particularly on the eastern bank, where it is flooded by innumerable canals, generally cut in those parts of the river running east and west, that the water may be thrown south into the interior. On the right bank, about twenty-six miles above Bukkur, a large navigable canal called the "Sinde," the work of the emperor, conducts a great body of water to Shikarpoor and Noushera, and joins that of Larkhanu. On that side of the river, the cultivation beyond is limited, as the districts of Boordgah Ken, and Moorzarka, which succeed each other, are peopled by wandering and unsettled Belooch tribes, who lead a pastoral and plundering life. The territory on both sides chiefly belongs to Sinde, for the boundary line stretches on the right bank to within fifteen miles of Mittun, and adjoins the dominions of the Seik; and on the left it terminates lower down in the latitude of 28° 33', twenty-five miles above Subzul. There is a strip of land, however, on the left bank, which forms a portion of the territories of the Daoodpootra chief Bhawul Khan; and the district immediately below that chief's territory in Sinde, is named Oobaro, and is inhabited by Duhrs and Muhrs, who are the aborigines of the country, and known by the name of Sindees.

The town of Shikarpoor, which stands twenty-two miles from Bukkur, on the Indus, is by far the largest town in this tract, indeed in Sinde, for it exceeds in size the capital, Hyderabad. The country around it is very productive, but in the change of masters, from the Afghans to the Sindians, its revenue has deteriorated to half a lac of rupees annually. It still, however, carries on an extensive inland trade, the greater portion of its merchants and people being Hindoos, and having agents in the surrounding countries. Shikarpoor is surrounded by a mud wall, and the governor of the place holds a most important post, and with it the title of Nuwab. The town and district fell into the hands of the Sindians about eight years ago, and it is the only unsettled portion of their country, the Afghan family, to whom it belonged, making frequent attempts to recover it. The frontier town of Subzul on

the left bank of the Indus, and twelve miles inland, is about one-fifth the size of Shikarpoor; it contains a population of five thousand souls, and is also surrounded by a mud wall. There are no other places of note. Mittun, or, as it is sometimes called, Mittun Cote, has not a population of fifteen hundred people, and its fort has been demolished. It is about a mile distant from the Indus, and must stand near the site of one of Alexander's cities, as he caused one to be built in this neighbourhood, to profit by the situation.

It will be observed both in this part of the course of the Indus and elsewhere, that there are no towns or places of any size in the immediate vicinity of the river; which is owing to the annual swell rendering it impossible to cultivate or raise a crop within its reach. This leads to the waters being conducted by canals inland; and the immediate neighbourhood of Subzul Kote has been deserted on this account, the great quantity of water forcing for itself a channel from this direction, down upon the Nulla at Alore. The Indus is very variable in its rise in different years, and for these two bygone seasons has not attained its usual height.

The people bordering on this part of the Indus live also during the swell in houses elevated eight or ten feet from the ground, to avoid the damp and insects which it occasions. Their bungalows are very small and neatly constructed of reeds; looking like little cottages, and being entered by a ladder. They are chiefly occupied by the pastoral classes, who continue on the banks of the Indus with their herds as long as the river will permit them. Herodotus mentions that the Egyptians slept in turrets during the rise of the Nile, and his description may be said to apply to the banks of the Indus.

The horned cattle to be seen in this part of the Indus are exceedingly numerous. Buffaloes are so plentiful as to be only a fourth the value of those lower down the river, and the very best may be purchased for ten reals each. Deer, hogs, and partridges abound on the banks of the river, and the water-fowl about Bukkur are numerous even in the dry season (May).

I have mentioned the districts lying westward of the Indus, and the predatory habits of the inhabitants. The Boordees occupy all the plains north of Shikarpoor, to the borders of the Brahooee country or Cutch Gundava. They are emigrants from Kej and Mukran, and are of the Belooch family of Rind. They are a fair and handsome race of men, more like Afghans than Belooches; they do not wear the costume of Sinde, but roll a cloth in folds loosely round their brows, and allow their hair to hang suspended in long tresses, which gives them a savage appearance. They took the name of Boordee from a noted individual in the tribe according to the Belooch custom, for the various tribes are nothing

more than the descendants of persons of note. The chief place of the Boordees is Duree, but they have no large town. The whole "ooloos," or tribe, is rated at ten thousand fighting men, and till their chiefs were taken into the service of the Ameer, they were constantly marauding; petty robberies are yet committed. Their language is a corrupt Persian.

Of the other tribes, the Juttooees, Muzarees, Boogtees, and Kulphurs, with many others, do not differ from the Boordees but in name. The Juttooees are to be found in Boordgah. The Moozarees, whose chief town is Rozau, extend as far as Dera Ghazee Khan, but their power is now broken, though they plundered in former times the armies of Cabool. The Kulphurs and Boogtees occupy the hills called Gendaree, which commence below the latitude of Mittun, and run parallel with the Indus.

In a country where the names of tribes are constantly undergoing such alteration, we are not likely to meet with much success in our inquiries after those left us by the Greek historians. From what Arrian says, however, of Alexander's movements below the Punjab, it appears to me that in Bukkur, or the neighbouring town of Alore, we have the rich and populous kingdom of Musicanus, for it must have been there that the Greek ordered a fort to be built, as the place was commodiously fitted for bridling the "neighbouring nations." The Ayeen Acbaree informs us, that Bukkur is the ancient Munsoora, but we are to recollect that we have not the name of the district, but of its kings, and the power and extent of its territories in the second and seventh centuries [as mentioned in the Periplus and Shah Nama] are good concurring proofs of its former wealth and influence. Mohamed bin Cassim, a thousand years after Alexander, here also subdued the Brahmins who revolted from the Macedonians. In Larkhanu, we have the country of Oxiganus, which was so extolled for its fertility; and in Sehwun we have Sindomana. I look upon Larkhanu to be well marked, for Alexander despatched the superannuated veterans of his army, through the country of the Archote and Draugi, to Carmania (Kerman); in other words, he used the pass of Bolan or Kelat, the high road to both of which branches off at Larkhanu. The mountains of Lukkee fix the territories of Sambus, governor of the Indian mountaineers. Sindomana cannot allude to lower Sinde, for it is always described as Pattala, and its chief as the Prince of the Pattalaas; and Sinde, to the present day, has reference only to the aboriginal inhabitants of this country, and distinguishes them from the Belooches and other invaders, though they have long exchanged the religion and authority of the Brahmins for the Mohammedan faith. The modern inhabitants of the banks of the Indus, from the sea to the Punjab, have no tale or tradition regarding the progress of the

Greeks; but they are ignorant and fanatical, nor have I been able, after diligent search, to possess myself of a coin or a relic which could aid me in inquiry.

Before I finally quit the Indus, and while on subjects of antiquity, let me add the opinions of the people regarding the influence of this river over the climate. They consider that it sends off a breeze when low, which the velocity of the inundation entirely allays. Herodotus said that the Nile was the only water he knew of, which did not give out wind; and he has been laughed at, and perhaps with reason, for the remark; but it is singular that the natives of this country should entertain similar notions. I can certainly imagine running water to cool the banks by which it passes, and Sinde is said to be hotter as you recede from the Indus. A northerly wind is also said to accelerate the periodical swell; and it assuredly would have that effect; but such a wind is rare in the rainy season.

The Indus from Mittun to Attock.—While in our progress to Mooltan by the Chenab or Acesines, I made various inquiries, and sent different people to acquire precise information regarding the Indus above Mittun. The Cabool mission in 1809, came upon that river at Aodoo da Kote, about one hundred miles north of the point in question; and I was solicitous to connect my own surveys with that place, and thus complete our knowledge of the Indus from the sea to Attock.

The river runs in this part of its course nearly north and south, and is free from danger and difficulty in navigation. It is here generally known by the name of Sinde or Attock, and traverses a country much the same as I have described near Mittun, being often widely spread from the lowness of its banks. Its breadth is afterwards considerably diminished, for at Kakuree, where Mr. Elphinstone crossed, the soundings did not exceed twelve feet, with a breadth of a thousand yards; while the Indus after receiving the Punjab rivers, rolls past Mittun with a width and depth exactly two-fold.

On the right bank of the river, near this point, the province of Dera Ghazee Khan, occupies the country as far as the mountains. It is a fertile territory, and the capital which bears its name is one of the largest towns on the Indus. It is surrounded by gardens and date groves, and stands in a very rich country. It has been long numbered among the conquests of the Seiks, who till lately farmed it to the Khan of Bhawulpoor, at an annual rent of nine lacs of rupees; but as the district originally produced but four, every species of extortion was practised, and this led to its resumption. The tract being remote from Runjeet Singh's dominions, he is anxious to hold it without requiring the services of his troops; and he has thus given Dajil and some portion of the territory to the

Brahooees, its former owners, on condition of military service.

The productions of Damaun, and the countries westward of the Indus, are sometimes brought by Dera Ghazee Khan, and crossed to Ooch; but the more frequented route lies higher up, and leads to Mooltan, passing the ferry at Kaheree. The river is not used in the transport of any portion of the trade, for the hire of boats is exorbitant, and merchandise is exclusively conveyed on camels or bullocks. Madder (called munjeet) is an article of export from this part of the Indus, and used to dye the fabrics of Bhawulpoor.

It is remarkable that the various expeditions which have been conducted from the upper provinces of the Indus to the countries lower down, have taken the rivers of the Punjab as far as they went, in preference to the Indus itself; but we are not to infer therefrom that the greater river is shut against navigation. The conquests of Alexander led him beyond the neighbourhood of the Indus; and in the case of the emperors, their capital was long fixed at Lahore, and several of their fleets against lower Sinde were fitted out at Mooltan, always a city of great importance in the empire, and on a river as accessible to the boats of the country as the Indus itself.

The Indus has been crossed at Attock, and an account of it and that fortress will be found in Mr. Elphinstone's work; but the means which the Maha-raja of Lahore has used of late years to transport his army to the right bank of the river, and which I heard from his officers, deserves mention. Runjeet Singh retains a fleet of thirty-seven boats at Attock, for the construction of a bridge across the river, which is only two hundred and sixty yards wide. The boats are anchored in the stream a short distance from one another; and the communication is completed by planks and covered with mud. Immediately below the fortress of Attock, twenty-four boats only are required; but at other places in the neighbourhood as many as thirty-seven are used. Such a bridge can only be thrown across the Indus from November to April, on account of the velocity of the stream being comparatively diminished at that season; and even then the manner of fixing the boats seems incredible. Skeleton frame-works of wood, filled with stones to the weight of two hundred and fifty maunds, and bound together strongly by ropes, are let down from each boat, to the number of four or six, though the depth exceeds thirty fathoms, and these are constantly strengthened by others to prevent accident. Such a bridge has been completed in three days, but six is the more usual period; and we are much struck with the singular coincidence between this manner of constructing a bridge, and that described by Arrian, in his 5th book, chap. 7th, when Alexander crossed the Indus

He there mentions his belief regarding Alexander's bridge at Attock, and except that the skeleton frame works are described as "huge wicker baskets," the modern and ancient manner of crossing the river is the same.

The Chenab, or Acesines, joined by the Sutlege.—The Acesines of the Greeks, or the modern Chenab, is lost in the Indus at Mittun, having previously gathered the waters of the Punjab rivers. The junction is formed without noise or violence, for the banks are depressed on both sides, and the river is expanded; an eddy is cast to the eastern side, which sinks the water below the usual level, but it does not occasion danger. The Euphrates and Tigris, when joined, pass to the ocean under the name of the 'river of the Arabs,' and the appellation of Punjnud, or 'the five rivers,' has been bestowed on this portion of the Acesines, but it is a designation unknown to the people living on its banks, and adopted, I conclude, for geographical convenience. The natives continue to it the name of Chenab, for it is the largest of the five rivers; and Arrian, who calls it the Acesines, states the same fact —'that it retains its name till it falls at last into the Indus, after it has received three other rivers.'

Under the parallel of 29° 20′ north latitude, and five miles above Ooch, the Chenab receives the Garra, or joint stream of the Beeas and Sutlege (or Hesdrus, Zaradrus, and Hyphasis of antiquity). This junction is also formed without violence, and the low banks of both rivers lead to constant alteration in the point of union, which but a year ago was two miles higher up. This circumstance renders it difficult to decide on the relative size of these rivers at their junction; both are about five hundred yards wide, but the Chenab is the more rapid. Immediately below the confluence the united stream exceeds eight hundred yards, but in its course to the Indus, though it expands sometimes even to a greater size, the Chenab rarely widens beyond six hundred yards. In this part of its course it is likewise subject to change. The depth is greater near its confluence with the Indus, exceeding twenty feet; but it decreases in descending the river to about fifteen. The current is swifter than that of the Indus, being about the rate of three and a half miles an hour. The Chenab is full of sand banks, but they do not interrupt its navigation by the "zohruys" or flat-bottomed boats, forty of which will be found between Ooch and Mittun, a distance of forty miles, and a two days' voyage.

The banks of the Chenab seldom rise three feet above the water's edge, and they are more open and free from the thick tamarisk than those of the Indus. Near the river there are green reeds not unlike sugar-cane, with a shrub called "wahun," with leaves like those of the beach tree; the country is also highly cul-

tivated, and intersected by various canals. The soil is slimy and most productive,—the crops are rich,—the cattle large and abundant,—the villages exceedingly numerous, and shaded by lofty trees; some of these are the temporary habitations of pastoral tribes, who remove from one place to another; but there are many of a permanent description on both banks;—their safety is in no wise affected by the inundations of the river, or those of the Indus, for the expansion of the water in this direction has been exaggerated, and rarely extends two miles from the banks of either river.

There is a peculiarity in the colour of the water of the Indus and Acesines,—the former, as I have before mentioned, is loaded with mud and of a clayey hue; the Chenab, on the other hand, is of a reddish colour, and when joined by the Sutlege, the waters of which are pale and like the great river, the contrast is most remarkable. For some distance the one river keeps the right and the other the left bank, while the line of demarcation between the two is most decided. The soil which these rivers traverse would tinge their waters, and appear to account sufficiently for their different colours,—at least I can assign no other plausible reason. The peculiarity is well known to the natives, who always speak of the "red water" of the Acesines, but none of the ancient authors have made mention of this circumstance.

The only place of note on the Chenab below its junction with the Garra is Ooch. It stands three miles westward of the river, on a fertile plain, shaded by numerous trees, and with a population of twenty thousand souls. It no doubt owes its site to the junction of two navigable rivers in the vicinity. Ooch is formed of two distinct towns situated a few hundred yards apart from each other; each has been encompassed by a wall of burnt brick now in ruins. The streets are narrow, and covered with mats as a protection from the sun; the population though numerous is miserably poor.

The country around Ooch is richly cultivated, the tobacco plant, in particular, grows most luxuriantly, and at the season of inundation the tract is one sheet of green fields and verdure. The productions of the gardens are various,—the fig, vine, apple, and mulberry, with the "falsa," which produces a little berry, and the bedee misk. Roses, balsams, and the lily of the valley, excite a pleasing remembrance of home, and there are many plants foreign to India. A sensitive shrub, called "Shurmoo" or the modest, particularly struck me; its leaves, when touched, close and fall down upon the stalk as if broken. The mango does not attain perfection in this soil or climate, and seems to deteriorate as we advance north. Indigo is reared successfully. Wheat, and other grains are cultivated in preference to rice, which does not form

here, as in Sinde and the lower provinces of the Indus, the principal food of the people. Such grains may be had in great quantities.

On Bhawul Khan's Country.—The small territory eastward of the Indus, which intervenes between the confines of the Chief of Lahore and the Ameers of Sinde, belongs to Bhawul Khan Daoodpootra. His frontier to the north may be loosely said to be bounded by the Sutlege or Garra; but at Bhawulpoor it crosses that river, and running westward to a place called Julalpoor comprises a portion of the country between the Sutlege and Acesines and the Acesines and Indus. The Rajpoot principality of Beecaneer bounds it to the east. It has Jaysulmere to the south, and on that part where it approaches Sinde a tract of four miles in either country is left without tillage to prevent disputes on the marches.

The greater part of this country is but a barren waste of sandhills, which encroach upon the rivers; but in their vicinity the tract is rich and fertile, and watered, like other banks of the Indus, by the periodical swell. The towns are few in number, and scantily distributed; but there are numerous hamlets on the Acesines. Bhawulpoor, which stands on the left bank of the Sutlege, has a population of about twenty thousand people, and is the mercantile capital; the walled town of Ahmedpoor, farther south, and about half the size, is the residence of the chief, as it lies close to Darawal, an ancient fort in the desert, without a town, and the only place of strength in the country. Darawal is mentioned in the histories of Sinde as a fortress worthy of Alexander; it was taken by Mirza Shah Hoosein in the year of the Hejira 931, but an account of the siege proves its position to have been more formidable than its strength. It is built of brick.

The influence of the chief of Bhawulpoor is as limited as his territory, his power having been crushed by the Seiks, and only saved from entire overthrow by a treaty which prevents Runjeet Sing from crossing the Sutlege. The revenues do not exceed ten lacks annually (excluding Dera Ghazer Khan, which properly belongs to the Seik); and three of these are demanded in tribute by the Lahore chief for his lands north of the Sutlege. Yet Bhawul Khan maintains some state, and has about two thousand regular troops (such as they are), with a train of artillery, to second the efforts of his feudatories in the field; his forces collected would also exceed twenty thousand men.

The Daoodpootras are a tribe of Mohammedans from the district of Shikarpoor, on the right bank of the Indus, which they held in the earlier part of Aurungzebe's reign. They crossed the river and achieved, by daring acts of bravery, the conquest of the lands now held by them, from the Dahis, Muhis, and other Sinde

tribes; and have been settled in Bhawulpoor for five generations. As the name Daoodpootra implies, they are descendants of one David; but they claim a lineage from the holy line of Abbas, the uncle of Mahomet. The chiefs of the tribe are named Peerjunee, and the common people Kihranee, nor are the *canaille* allowed to assert their right to the same holy descent as their masters, which casts some shade on the lustre of their parentage. The whole tribe does not exceed fifty thousand souls. They are a fair and handsome race of people, but disfigured by long bushy tresses of hair which they allow to hang over their shoulders.

Bhawulpoor was a tributary to Cabool as long as that government lasted; and the chief had the title of Nuwab, but was nearly independent. The three last rulers have taken the name of Bhawul Khan, from a saint of great repute in Mooltan, and the designation of Nuwab has been changed for that of Khan, by which title he is familiarly known to his subjects. The present Bhawul Khan is about thirty years old, of a very mechanical turn of mind, and much beloved by his people, giving great encouragement to trade and agriculture. He succeeded about five years ago, to the prejudice of his elder brother, who now holds an office under him; but his power is firmly fixed, and he has a family of three sons. The form of government is despotic, and there is no chief of any great importance in the country but the Khan himself; the style and formality of his court keeping even his own family at a humble and respectful distance.

The manufactures of Bhawulpoor consist of loongees, which are celebrated for the fineness of their texture. The weavers are Hindoos, a numerous class in this country, and who enjoy more toleration in their trade than in their religion.

The merchants of Bhawulpoor deal extensively in goods of European manufacture, which they receive from Callee in Malwah, by way of Beecaneer and the Desert, and send into the Douranee country, by the route of Mooltan and Sein, crossing the Indus at Kaheree. This outlet for the manufactures of Europe has diminished with the anarchy in Cabool; and the supply at present, as in many other countries, often exceeds the demand. The Hindoos of Bhawulpoor, and indeed of all this country, are a most enterprising race of men; they often travel to Bulkh and Bochara, and sometimes to Astracan, for purposes of commerce; they take the route of Peshawer, Cabool, and Bamian, and crossing the Oxus, exchange at Bochara the productions of India for those of that quarter of Asia and Russia, which are annually brought by the merchants of that country. They spoke highly of the Uzbek king, and praised Dost Mahomed of Cabool, for the protection he afforded to trade. The manner of crossing the Oxus, as described to me by these people, is too singular to be

omitted. Horses are yoked to small boats, and are driven across the stream. The current of the Oxus is said to be less rapid at the surface than lower down. The Sutlege, or rather the joint stream of it, and the Beeah or Beeas, called Garra, on which Bhawulpoor stands, is a navigable river, though not used in the transport of its merchandise; but then it does not lie on any available line of route, except to Sinde, with which country, as I have before repeated, there is no trade from the upper provinces of the Indus.

Of the name of this river (the Beeah), I may add that it is a contraction of Bypasa, in which we have nearly all the letters of Hyphasis, the designation of it found in the ancient authors.

The Hydaspes.—I have little to communicate regarding the Hydaspes, which I have only seen at its mouth, or when commingled with the other rivers of the Punjab. The celebrity of a stream, on the banks of which Alexander encountered Porus, led me to the point of confluence with the Acesines, a spot likewise famed in history, from the calamity which overtook the fleet of the Greeks, in the violence and rapidity of the stream.

The Hydaspes is named Behui or Bedusta, also Jylum, by the people on its banks, and falls into the Acesines or Chenab, in 31° 11′ 30″ N., forty-five miles north of Tolumba, a small town on the Ravee. The historians of both Alexander and Timoor have mentioned the rapids at this confluence; but they only exist in the months of July and August, when the rivers are swollen, and the boat is with difficulty crossed at the Trimo ferry once a-day; for the banks here coincide but faintly with the description of Arrian, they do not confine the river in a narrow channel, nor are there rocks any where near to mark the spot where the Greeks retired with their dismantled fleet. The name of Hydaspes is yet discoverable in the modern appellation of Bedusta, and there are other circumstances corroborative of its identity. We are to infer that both the heroes visited this famous spot in these months, though Pliny has stated that Alexander commenced his voyage in November. The Hydaspes is less rapid, and altogether a smaller stream than the Acesines, being about five hundred yards in breadth at the point of conflux; when joined, the two rivers roll on for a short distance in a channel full a mile in breadth, and about twelve feet deep, uniting without commotion, and but very little noise.

The timber of which the boats of the Punjab are constructed, is chiefly floated down by the Hydaspes from the Indian Caucasus, which explains satisfactorily the selection of it as a naval arsenal, by Alexander, in preference to the other rivers, by either of which he might have reached the Indus without a retrograde movement. There are but few boats in this river; about fifty are

used in the salt trade at Pindu Dadun Khun, some of which carry five hundred maunds of salt, and exceed one hundred feet in length, being built like the "zohruy," rounded at both ends; they do not hoist a sail, and can drop down with the stream from the mines, in twelve days, to Mooltan, passing in safety the conflux above described. We are informed that the war ships of the Greeks encountered the greatest difficulties in the navigation of this river, and are led naturally to attribute the calamities of the fleet to their build, for the provision-boats, which are described as of "a round form," and I presume like the "zohruy," escaped uninjured. That Alexander built the greatest part of his own fleet is certain, for he commenced his voyage on the Hydaspes with eight hundred vessels, and when he first reached that stream he was entirely destitute of them, and had the boats by which he passed the Indus broken up, and brought by land across the *Dooab* (the tract between the two rivers). We hear likewise of triremes and biremes, which in no way correspond with the present description of boats on the Indus.

The Hydaspes and Accsines have been each forded in the cold season, but after their junction have never been passed but by boats in the memory of man. Timoor, in his expedition to Delhi, threw a bridge across the Trimo ferry; and Runjeet Singh swam the Hydaspes at Sahewal with a large body of horse, but that enterprising chief has crossed the Indus itself above Attock in the same manner. The merchants from Khorassan travel to India at all seasons, taking the route by Deru Ismael Khan, Mankera, and the Sandy Desert, and cross at Trimo, on the road to Tolumba. The country between these two places last mentioned differs from the right bank of the Hydaspes; destitute of sand hills, it is almost as barren and desert. A sheet of hard clay, with clumps of tamarisk, khair, lair, kejra, and such other shrubs as are to be found in the Thurr or Desert, extends from the Chenab to the Ravee. There is not a blade of grass but on the banks of the rivers; water is furnished from wells about thirty feet deep, but is scarce, and always fetid and noxious, though rarely salt.

The population of this tract chiefly consists of the pastoral tribe of Kattia or Jun, who are so called from their living in communities, "Jun" having that signification; but few of them are found at any distance from the rivers, except in the rainy season. They have immense herds of buffaloes and camels, from the milk of which they derive sustenance, hardly cultivating the soil, though some tolerable fields of tobacco, raised by irrigation, may be seen near their habitations. They are a tall and handsome race, which may be attributed to a rule among them prohibiting marriages before their females attain the age of twenty years; for they believe that the children of an early union, so common among every other

Indian tribe, are puny and unhealthy. These Kattia are a predatory and warlike race, few of them free from scars and wounds; they extend from the banks of the Hydaspes across the deserts to Delhi, and are the aborigines of this country, who I think may be recognised in the Cathai of Arrian, who calls them "a stout people, well skilled in military affairs." I am aware that these people have been supposed to be the Khyetrees or Rajpoots, but their country is farther to the south, and they did not occupy this part of India in the Greek invasion.

In the space which intervenes between the Hydaspes and Ravee, and about equi-distant from either river, stand the ruins of Shorkote, near a small town of that name; they occupy a considerable space, being much larger than Sehwun, and of the same description, viz., a mound of earth surrounded by a brick wall, and sufficiently high to be seen from a distance of six or eight miles. The traditions of the people state that a Hindôo Rajah, of the name of Show, ruled in this city, and was attacked by a king from "Wulayut," or the countries westward, about one thousand three hundred years ago, and overcome through supernatural means. I have various coins, both Hindoo and Mohammedan, found at Shorkote; some are as late as the reign of Shah Jehan, but one of them, which is square, has a human figure stamped on it, with Sanscrit characters. Shorkote is mentioned by Timour's historian, and its locality leads me to fix on it as the place where Alexander received his wound, for he crossed to the west bank of the Hydraotes in pursuit of the Malli, who had retired to "a fortified city not far off," the walls of which were of brick; and the story of the King of the West is, to say the least of it, a very probable tradition of Alexander of Macedon. The construction of the place throws some light on the fortresses which were captured by Alexander, and the ancient cities on the Indus appear to have been mounds of earth, surrounded by brick walls. Besides Shorkote, there is another place of some antiquity, about ten miles westward of the Hydaspes, where it falls into the Chenab. It is called Aoch, and is a fortress erected on the sand-hills of the Desert; its former name was Nurmee Sumee ka bir. It is surrounded by five successive walls of mud, and remained uninhabited till within these last fifty years. I question if it dates beyond the Mahommedan invasion, and in answer to my inquiries, I was told there was no authentic history in the world beyond the *Arabian Prophet!*

The Chenab or Acesines joined by the Ravee or Hydraotes.—The Acesines is the largest of the Punjab rivers, but its size has been exaggerated. Ptolemy informs us that it is fifteen furlongs wide in the upper part of its course; and Arrian states that it surpasses the Nile when it has received the waters of the Punjab;

falling into the Indus by a mouth of thirty stadia. Alexander warred in the rainy season, when these rivers are much swollen; but at a period when the inundation has set in for two months, we have exposed the latter part of this amplification by confining the Chenab to a breadth of six hundred yards and a depth of twenty feet. There is no perceptible diminution in the size of this stream from the Sutlege upwards, for that river increases the depth without adding to the breadth, and the Chenab, south of the Ravee, will be found, as I have before described it, only with the shallow soundings of twelve feet; its banks are so low that it is in some places spread as much as twelve hundred yards, and looks as large as the Indus. At Mooltan ferry, it was one thousand yards across, and below its junction with the Ravee, above three-quarters of a mile; but these are exceptions from the general feature of the stream.

The Chenab receives the Ravee or Hydraotes below Fazilpoor, under the parallel of 30° 40′ north latitude, nearly one hundred and thirty miles from Aoch by the windings of the river, and upwards of thirty-five miles from Mooltan, in the neighbourhood of which city it passes on its course to the Indus, in a direction about S.W. We performed the voyage, from one junction to the other, in six days, against the stream. The redness of its waters has been already mentioned, and those of the Ravee have even a deeper tinge; it runs quicker than the Indus or any of the Punjab rivers; its banks on both sides are open and copiously irrigated by large canals of running water dug with great labour, but on the right bank from Mooltan upwards, there is a desert of low sand-hills, which does not admit of cultivation, and which presses in upon the cultivated land at the short distance of two miles from the river. It is a mistake, however, to believe that this desert commences so low as Aoch, and occupies the Dooab of the Indus and Acesines; for that part has many large villages, and is rich and fertile across from one river bank to the other. The distance between the two rivers is about twenty-five miles, nor does it become desert till it widens beyond that space below Mooltan.

At Mooltan the Acesines is navigated by the "zohruy," but the vessel differs in some degree from that used in the Daood-pootra country; it is much smaller, with gunwales not more than two feet above water, and hoists a mat sail on an inferior mast. As there is no trade, ferry-boats only are to be had, if we except the few which bring down salt from the Hydaspes; we embarked in a fleet of ten boats, and an equal number in addition are not to be procured in this part of the river. These vessels are built of timber from the mountains in which the Punjab rivers have their source; the wood is called "dyar;" and the supply which the inundation roots up and floats down is sufficient for all pur-

poses, without any one carrying on a professed trade in it. While the boats here are constructed of this wood, they are repaired with the "talee tree," a few of which may be found near every village; and though this country is not well-wooded, an army might soon procure a supply, by cutting trees from the villages near the river, and floating them down to any place of rendezvous.

The natives of this country cross the rivers without boats, on skins or bundles of reeds, and whole families may be seen passing in this (to us) apparently insecure mode. I have observed a man with his wife and three children in the middle of the stream; the father, seated on a skin, tugged along his wife and progeny, who were squatted on reeds, and one of them an infant at the breast. Goods, clothes, and chattels, form a bundle for the head, and though alligators do certainly exist, they are not numerous, or such as to deter the people from repeating an experiment, to say the least of it, not free from danger.

The greatest part of the country, bordering on this part of the Acesines, is included in the district of Mooltan, which, besides the city of that name, contains the modern town of Shoojuabad. The government, when tributary to Cabool, has been described in the worst terms, but Runjeet Singh, has recruited its inhabitants, repaired the canals, and added to their number, raising it to a state of opulence and prosperity, to which it had been long a stranger. The soil has amply repaid the labour, for such is its strength, that a crop of wheat, before it yields its grain, is twice mowed down as fodder for cattle, and the ears still produce an abundant harvest. The indigo and sugar crops are likewise rich, and one small strip of land, five miles long, which we passed, afforded a revenue of seventy-five thousand rupees to the government. The total revenue of the Sooba amounts to ten lacs of rupees yearly, or double the sum it produced in 1809. Among the productions of Mooltan, I should mention the date trees, which grow in great abundance near the city; they furnish a fruit much inferior to that of Arabia, but it is in great demand; and the trees, though stunted, produce very bountifully, not being weakened, as in India, by the extraction of the juice or intoxicating "neera." I have mentioned, when describing Bukkur, the tradition of this country regarding the date tree; and this is certainly supported by its being principally found on the tract of Mahomed bin Cassim, who, after capturing Alore, marched on Mooltan, which is the exact line of country where the tree abounds.

The city of Mooltan is described in Mr. Elphinstone's work on Cabool, but as the mission was received with great jealousy, and not permitted to view the interior of its fort, I do not hesitate to add the following particulars. The town of Mooltan is upwards of three miles in circumference, surrounded by a dilapidated wall,

and overlooked on the north by a fortress of some strength. It contains a population of about sixty thousand souls, one-third of whom may be Hindoos; the rest of the population is Mohammedan, for though it is subject to the Seiks, their number is confined to the garrison, which does not exceed five hundred men, and the Afghans have left the country since they ceased to govern. Many of the houses evidently stand on the ruins of others, they are built of burnt brick with flat roofs, and rise to the height of six stories, their loftiness giving a gloomy appearance to the narrow streets. The inhabitants are chiefly weavers and dyers of cloth. The silk fabric of Mooltan is called "kais," and may be had of all colours, from the value of twenty to one hundred and twenty reals; they are less delicate in texture than the loongees of Bhawulpoor. Runjeet Singh has with great propriety encouraged their manufacture since he captured the city, and by giving no other cloths at his Durbar has increased their consumption, as they are worn round the waist by all the Seik Sirdars; they are also exported to Khorassan and India, and the duties are equitable and moderate. To the latter country, the route by Jaysulmir and Beecaneer is chosen in preference to that by Sinde, from the trade being on a more equitable footing. The trade of Mooltan is much the same as that of Bhawulpoor, but on a much larger scale, for it has forty shroffs (money-changers), chiefly natives of Shikarpoor. The tombs of Mooltan are celebrated; one of them, that of Bhawulhugg, who flourished upwards of five hundred years ago, and was a cotemporary of Sady, the Persian poet, is considered very holy, but in its architecture it is surpassed by that of his grandson Rooku i Allum, who reposes under a massy tomb of sixty feet in height, which was erected in the year 1323, by the Emperor Tooghluck, as his own tomb; its foundation stands on higher ground than the summit of the first wall. There is also a Hindoo temple of high antiquity, called Pyladpooree; it is mentioned by Thevenot in 1665.

The fortress of Mooltan merits a more particular description. It stands on a mound of earth, and is of an irregular figure of six sides, the longest of which (towards the N.W.) extends about four hundred yards. The wall has upwards of thirty towers, and is substantially built of burnt brick, to the height of forty feet outside; but in the interior, the space between the ground and its summit does not exceed four or five feet, and the foundations of some of the buildings overtop the wall, and can be seen from the plain below. The interior is filled with houses, and till its capture by the Seiks in 1818, was peopled, but the inhabitants are not now permitted to enter it, and a few mosques and cupolas, more substantially built than the other houses, alone remain. The fortress of Mooltan is without a ditch, which the nature of the

country will not admit of being constructed, and Runjeet Singh has expended great sums, without success, in attempting to remedy this defect. The inundation of the Acesines and its canals, together with rain, render the vicinity of Mooltan a marsh even in the hot weather; the waters of each year remaining stagnant till the succeeding swell carries them away. The walls of the fortress are protected in two places by dams of earth. The modern fort of Mooltan was built on the old site by Moorad Bukhsh, the son of Shah Jehan, about the year 1640, and it subsequently formed the Jaghire of that prince's brothers, the unfortunate Daro Shikoh, and the renowned Aurungzebe. The Afghans seized it in the time of Ahmed Shah, and the Seiks wrested it from the Afghans, after many struggles, in 1818. The conduct of its governor deserves mention; when called on to surrender the keys, and offered favourable terms, he sent for reply, that they would be found in his belly, but he would never yield to an infidel; and he perished bravely on the breach. His name, Moozoffer Khan, is now revered as that of a saint, and his tomb is placed in one of the holiest sanctuaries of Mooltan. The walls of the fort were thrown down in many places by the Seiks; but they have since been thoroughly renewed or repaired; they are about six feet thick, and could be easily breached from the mounds left in making the bricks, which are within cannon range of the walls.

Mooltan is one of the most ancient cities in India. We hear of its capture by Mahomed bin Cassim, in the first century of the Hejira, and it afterwards attracted by its wealth, the Ghiznian, Gorian and Mogul emperors of Hindoostan; but we have little reason to doubt its being the capital of the Malli of Alexander. Major Rennell has supposed that to have been higher up and nearer the banks of the Ravee, because Arrian states that the inhabitants fled across that river; and the authority is high, but Mooltan is styled "Malli than," or "Molitharum," the place of the Moli to this day; and we have no ruins near Tolumba, on which to fix as Major Rennell's supposed capital. It is expressly stated that Alexander crossed the Ravee, and after capturing two towns, led his forces to the capital city of the Malli, from which he pursued the inhabitants across the river; and as the distance is but thirty miles, and Mooltan is pointed to as a place of high antiquity, I do not see why we should forsake the modern capital, when in search of the ancient. Had we not the earliest assurances of the age of Mooltan, its appearance would alone indicate it. The houses are piled on ruins, and the town stands on a mound of clay, the materials of former habitations which have gradually crumbled; an infallible proof, as I have remarked of Tatta and Aoch, of the antiquity of the town. The late Nuwab of Mooltan,

in sinking a well in the city, found a war drum at a depth of sixty feet from the surface, and several other articles have been from time to time collected, but no coins have been hitherto seen. Mooltan may in some degree answer to the description of the Brahmin city, and its castle, which Alexander captured before attacking the capital of the Malli, but in that case we should have no site to fix on as the capital. The manufactures of Mooltan and Bhawulpoor seem to assist in fixing the country of the Malli, for Quintius Curtius informs us, that the ambassadors of the Malli and Axydracæ (Mooltan and Aoch) "wore garments of cotton, lawn, or muslin, (*lineæ vestis*) interwoven with gold, and adorned with purple;" and we may safely translate *lineæ vestis*, into the silks of Mooltan and Bhawulpoor, the "kais" and "loongee," all of which are interwoven with gold, and most frequently of a purple colour. Silk is first mentioned by Virgil, who flourished three hundred years after Alexander's voyage down the Indus, and we are assured by an eminent author (Gibbon), that it was unknown in Europe till the reign of Justinian, in the 6th century of the Christian era.

The town of Shoojuabad is the only other place of note in the now limited province of Mooltan. It is a town of about ten thousand inhabitants, standing on a plain four miles eastward of the Acesines, and surrounded by a fine wall of brick, thirty feet high. The figure of the place is an oblong square, and the wall is strengthened by octagonal towers at equal distances. The interior is entirely filled up with houses, which are built in streets at right angles to one another, and a suburb of huts surrounds the walls. Shoojuabad fort was built by the Nuwab of Mooltan, in 1808, and the public spirit of that person raised it in ten years to its present size. It is situated in a most beautiful country, and has the advantage of two spacious canals to water its fields, for many miles both above and below the town. It was captured by the Seiks after Mooltan fell, and now forms the frontier fortress of the Lahore chief, being garrisoned by about a hundred men.

The Ravee or Hydraotes, below Lahore.—The Ravee is the smallest of the five Punjab rivers, but in connexion with them and the Indus, forms a navigable channel from the sea to Lahore. It joins the Chenab in the latitude of 30° 40' N., near the small village of Fazilshah, by three different mouths, all of which have eight feet water. From Lahore downwards, the Ravee preserves a breadth of about one hundred and fifty yards, and as its banks are high and firm, there are but few places where it is more expanded. This river is so tortuous in its course, that sails cannot be hoisted in a boat; and a day's voyage often gives but a direct progress of three or four miles, where the turnings of the river have been six

fold. Lahore is only one hundred and seventy-five miles from the embouchure of the Ravee, but by the river the distance exceeds three hundred and eighty British miles.

The Ravee is fordable in many places during eight months in the year, but its general depth is about twelve feet, and I am satisfied that a vessel drawing five feet of water could navigate it at all times. The boats of the country do not draw more than two or three feet, but they are the common flat-bottomed craft already described. There is no obstruction to these vessels in any season of the year; but the Ravee is not used by the merchants, and the boats on it are entirely built for ferrying. Below Lahore there are fifty-two of them, and we ascended in these vessels, none others being procurable. The voyage occupied twenty-one days, and was exceedingly tedious. I am disposed to think that it is the extreme crookedness of the river which prevents its being navigated.

The Ravee is a foul river, much studded with sand-banks, many of which are dangerous quicksands. The zigzag course it pursues bespeaks the flat nature of the country it traverses; yet its banks are more firm and decided than those of the Indus, or any other of the Punjab rivers. Near Lahore, they rise sometimes to a perpendicular height of forty feet; in many places they attain half that elevation, and give thus to the river more the appearance of a canal than a running stream. The country bordering on the Ravee is little liable to be flooded; and it is worthy of remark, that there are no cuts from this river for the purposes of agriculture, to be found below Lahore. Its current is something less than three miles an hour. The water is of a reddish colour like the Chenab; but it is liable to change, as we remarked in our voyage up, from the fall of rain in the mountains. This river is yet called Iraoty, in which we recognize the Hydraotes of the Greeks.

The banks of the Ravee are open, and peopled from its mouth upwards, but the villages for half the distance to the capital are of a temporary description, the moveable hamlets of the pastoral tribe before-mentioned, called Jun or Kattia. From Futihpoor they are numerous, and the country is cultivated; but the space below that town is destitute of fields, and all symptoms of agriculture. The tract between the Ravee and Sutlege is of the same sterile and unproductive description, as on the northern side of the river towards the Hydaspes. Saltpetre is manufactured in considerable quantities on both sides of the Ravee.

Lahore is the only town of note on the banks of the Ravee, but the river has lately forsaken its immediate vicinity, and this ancient capital now stands on a small branch. The position of Lahore is good in a military point of view, being equidistant from

Mooltan, Peshawer, and Cashmere; and the ruler of the Punjab can thus overawe his subjects with advantage. Tolumba is a small town near the mouth of the Ravee, with a population of about fifteen hundred people; it has a weak brick fort, of a circular shape, and stands in a thick grove of date trees two miles south of the river.

The Punjab.—The territories of Maha-raja Runjeet Sing stretch from the Sutlege to the Indus, from Cashmere to Mooltan, and comprise the whole of the countries watered by the Punjab, or five tributary rivers eastward of the Indus. The power of the Maha-raja over this tract of country is consolidated; he commands both the fastnesses of the mountains and its alluvial plains. So entirely has the Seik nation altered its constitution under this chief, that within a period of twenty years it has passed from a pure republic to an absolute monarchy. The genius of one man has effected this change, though contending with powerful opposition from a religion, which inculcates, above every other tenet, democracy, and the equality of all.

This change of habits has been general, and the fortunate prince who has achieved it is not more pre-eminent among his nobles, than they are among their followers, from whom they receive a respect bordering on veneration. We have now no convocations at Amritsir, the sacred city of the Seiks,* where the affairs of the state are discussed and settled; and none of the liberty which the followers of Gooroo Govind proudly claimed as the feature of distinction in their tribe. It is evident that the change will affect the energies of the Seik nation, for these sprung from a religion which was free from the worn-out dogmas of Hindooism, and the deteriorated Mohammedanism of their neighbours, the Euzoofzyes. Their bravery was coeval with that religion, and based upon it. Their political greatness sprung from their change of faith, which has been thus revolutionized; but the Seiks are yet left with peculiar tenets, and continue to all intents and purposes a distinct people.

The military resources of the Punjab are immense;—it yields more grain than is sufficient for the consumption of its inhabitants, but the scarcity of population prevents the full measure of its production; camels, mules, horses, and cattle abound,—and all of them, except the cattle, which are small, are of a superior description. The roads, from one extremity of the country to the other, admit of wheeled carriages, except among the mountains. The Indus, and all the other rivers, are navigable, though not navigated; they have ferry-boats in abundance, and their banks afford materials for their further construction; the rivers are, besides, frequently passed on skins,—but these are more in use among the mountains than in the plains.

The Punjab lies on the high road from Cabool to Hindoostan, and has been a prey to inroads and invasion, which have had their effects on the people, and unsettled their habits. The Seiks owe their rise to this state of things, and have mainly acquired their supremacy from the martial spirit generated by constant collision, aided, of course, by religious excitement. There are few Asiatics more brave,—they are individually brave, and will attack a tiger or a lion on foot with a sword. Their physical powers, also surpass much those of the natives of Hindoostan; and from early life they are trained up in every manly exercise that becomes a soldier. They use indiscriminately the bow and the matchlock, are skilful horsemen, and all of them are taught to swim. Their religion is not so strict in its observances of caste and food as that of the Hindoos; and the Seiks are provisioned like a European army, and eat in messes, like English soldiers. They undergo great fatigue, and the length of their marches is incredible.

The Punjab has, in former times, commanded Hindoostan, and is in turn held in subjection by the central position of Lahore, its capital. The house of Timour, from this base, fixed itself on the throne of Delhi; and but for the presence of the British, the same game might be again played. Lahore is well adapted for a capital. As already noticed, it is equidistant from Mooltan, Peshawer, Cashmere, and, I may almost add, Delhi. It stands in a most fertile country, and an army of eighty thousand cavalry has been supported by the resources in its neighbourhood; while the people assert that provisions have been always cheaper as the demand increased. The city now contains about eighty thousand people, and is defended by a strong brick wall and ditch, which may be flooded by the Ravee; there are twelve gates, and as many semicircular outworks. The shape of the city is oval, the elongation being from north to south; it does not exceed three miles in circumference. It could not withstand a siege, from the density of its population, but it would afford ample security against such inroads as those of Ahmed Shah and his successors. Lahore is inferior in size and strength to Amritzir, which is a mud fortification of great thickness, and now being faced with brick. It is upwards of seven miles in circumference, and has a ditch surrounding it. The population may be rated at one hundred thousand souls. There is a strong fortlet, called Govind-ghur, close to Amritzir, on the plain, in which the Maha-raja secures his treasures. There are no other cities of note in the Seik territories but Mooltan and Cashmere.

The paucity of Seiks, in a country ruled and governed by them, is remarkable. The mother-earth of the tribe is the "dooaba," between the Ravee and Sutlege; and few of them are to be found thirty miles below Lahore. I am assured that there are no Seiks

westward of the Hydaspes; and to the eastward of Lahore, where they are said to predominate, they do not certainly compose a third of the population. The Punjab, indeed, is a poorly-peopled country in proportion to its fertility, though it is probable that it has increased in population under the present ruler.

X.—*Recent Accounts of the Pitcairn Islanders.* Communicated by John Barrow, Esq., F.R.S. Read 10th June, 1833.

As the public have not ceased to take a great interest in the little colony of Pitcairn's Island, though no account of its proceedings has been published since that given in the Narrative of Captain Beechey's Voyage, the following extracts from official documents regarding it will probably be found interesting. The first is from a private Journal kept by the Honourable Captain Waldegrave, who visited the island in H.M.S. Seringapatam, in 1830, shortly before its inhabitants were induced to emigrate to Otaheite. The second is a despatch addressed to the Lieutenant-Governor of New South Wales, by Captain Sandilands, of H.M. sloop Comet, who was employed to remove them. The remainder describe them since their return.

Pitcairn's Island, March, 1830.—We arrived here in the Seringapatam on Monday the 15th March, 1830, about seven o'clock; soon after eight, Edward Young, a native, came alongside in a small canoe guided by one paddle; he wore a European waistcoat and trowsers, and breakfasted with me, saying grace before and after. About nine several others came on board in a jolly boat; the senior native, Thursday October Fletcher Christian, was one. After breakfast many of them accompanied us to the shore; we landed about noon. At the top of the first level, seated in a grove of cocoa-nut trees, were assembled many of the wives and mothers. "I have brought you a clergyman."—"God bless you, God bless you!" was the universal answer. "To stay with us?"—"No!" "You bad man, why not?"—"I cannot spare him, he is the clergyman of my ship. I have brought you clothes, which King George sends you." "We rather want food for our souls," &c. The welcome was most affecting; the wives met their husbands and greeted them with joy as if they had long been absent;—they received us most cordially, but more particularly the chaplain, Mr. Watson,—the men sprung up to the trees, throwing down cocoa-nuts, and tearing off the husks with their teeth, offered us the milk. When we had rested they took us to their cottages, where we dined and slept.

In the evening we walked to see Christian's and Adams's graves.

They are at some distance from each other,—the grave of the former near the spot where he fell, murdered, about one-third from the summit of the island; the latter is buried by the side of his Otaheitan wife, at the end of his cottage-garden. An hour after sunset we supped, and at nine o'clock retired to bed.

Pitcairn's island was surveyed by Captain Beechey, in 1826, therefore I shall only state what I saw. It is very high, with precipitous sides, and without anchorage; its basis is sandstone rock, mixed with particles of iron; occasionally there are volcanic rocks. The soil is clay, mixed with sand, very rich, and of great depth. There are three landing-places, two in smooth water; one of these is on the west, the other on the south-east side; near this last Mr. Sayer seems to think there is anchorage, half a mile from the shore. The ascent from the beach at these places is so steep that the natives object to land there. The third, and usual landing-place is directly under the village, on the north side of the island; the approach to it is very dangerous, and cannot be attempted in safety without the guidance of a native. There is no cove,—a rock projects about seventy feet to the sea; beyond this, about thirty fathoms from the shore, a ridge of rocks runs parallel to the beach. There is but one opening, and that not fifteen feet wide: they watch the surf, and observing one unusually high, they row the boat on this, and guide it within a foot of the rock, then pull due east to avoid another; both cleared, the boat lands on a sandy beach, about ten feet wide. Outside of this rock the Bounty was anchored and burnt. There is a well, not of very good water; and here, also, begins the path leading to their village,—it is almost perpendicular, the thermometer at 90°. This continues two hundred feet, beyond which the path becomes more level, undulating with the land, passing through groves of cocoanut trees, yam, and potato grounds.

Their houses are of wood, some of two stories, which are called double cottages, thatched with palm leaves, rolled on sticks, leaving a projecting end of one or two feet. These sticks are placed horizontally on the rafters, beginning with the dropping eaves, and as they are ranged above each other, the loose end of the palm-leaf lies over them beneath, and forms a very thick thatch, lasting about seven years. They have no windows but shutters, all of wood, about a foot wide, so that seated, a free circulation of air passes over the head without being in a draught. If the cottage is double, the beds are placed upstairs, and the shutters are fitted the same as below;—their furniture, four post-beds with mattresses, sheets of the paper-mulberry cloth, large chests, benches, a table, knives and forks. They cook out of doors; to each house is attached a work-shop, where the cloth is made, a pig-sty, and we saw the beginning of a flower-garden.

They appear to be careless about other fruits or vegetables than yams, sweet potatoes, cocoa-nuts, plantains, and bananas. The yam grounds are cropped successively four or five times, then neglected, and other land cleared. Calavances, peas, Irish potatoes, tobacco, and wheat, have been brought, once raised, and neglected. The bread-fruit from neglect was becoming scarce. Gourds, water-melons, sugar-cane, pumpkins, and calabashes, were raised for use and barter; we saw one citron and one orange tree, both very young and not in bearing.

The best well of water is called Brown's well, two hundred yards above the village—soft water. Another just below the school-house, is used for culinary purposes, stock, and washing. Other wells have been sought by digging, without success.

The animals are goats, pigs, and fowls. We gave them three ewe-sheep, a duck, drake, goose, and gander. The trees are cocoa-nuts, bread-fruit, banyan, and poplar-leaved hibiscus.

It was with very great gratification that we observed the Christian simplicity of the natives. They appeared to have no guile. Their cottages were open to all, and all were welcome to their food; the pig, the fowl was killed and dressed instantly—the beds were ready, each was willing to show any and every part of the island; and to any question put by myself or Mr. Watson, as to the character or conduct of any individual, the answer was, "If it could do any good to answer you, I would, but as it cannot, it is wrong to tell tales." They repeatedly informed me that there were eighty-one souls on the island; but after frequent counting, we only reckoned seventy-nine. One quietly gave the christian names of two others, but declined saying who the parents were, as "It would be wrong to tell my neighbours' shame." Before they began a meal, all joined hands in the attitude of prayer, with eyes raised to Heaven, and one recited a simple grace, grateful for the present food, but beseeching spiritual nourishment. Each answered, Amen; and after a pause the breakfast or supper began—water or the milk of cocoa-nuts was the only beverage. At the conclusion, another grace was offered up. Should any one arrive during the repast, all ceased to eat—the new guest said grace, to which each repeated Amen, and then the meal continued.

The children were fond and obedient, the parents affectionate and kind towards their children—we did not hear a harsh word used by one towards another.

After the English were retired to rest, the natives assembled in a cottage, and the evening service was read by Mr. Watson. On the 16th, at night, all again assembled. The afternoon church service was performed, and a lecture given by Mr. Watson. They all made the responses with regularity, and it was a most striking scene. The place chosen was the bed-room of a double

cottage—that is, one of two floors; the ascent was by a broad ladder from the lower room, through a trap-door. The clergyman stood between two beds, and at his back the only lamp was placed. On his right in the bed, three infants were soundly sleeping; on his left three men sat at the foot of the bed—on each side and in front were kneeling the native men, some in the simple mara displaying their gigantic figures—others partly clothed in trousers and jacket, the neck and feet bare—behind were the women in their modest cloth dresses, entirely concealing the form, leaving the head and feet bare; the girls wore in addition a sheet knotted as a Roman senator's toga, thrown over the right shoulder, and under the left arm. When the general confession commenced, each knelt facing the clergyman, with hands raised to the breast in the attitude of prayer, slowly and distinctly repeating the confession. Each was absorbed in the solemnity of the service. The text was most happily chosen:—"Fear not, little flock, for it is your Father's good pleasure to give you the kingdom." At the conclusion of the service, they requested permission to sing their parting hymn, when all the congregation, in good time, sang "Depart in peace." Their voices were all tenors and of the same key.

The women are clothed in the paper mulberry white cloth, extending in folds from the shoulders to the feet, and so loose as entirely to conceal the figure. The mothers nursing carry their infants within their dress, with frequently an older child of a year old, seated across the hip, with its little hands clinging to the shoulder, the arm passed over its body keeping it in safety. The men and boys, except on Sundays, when they put on a European dress, wear nothing but the mara—a waist-cloth passing over the hips and through the legs. The climate is too hot for more clothing. The men are from five feet eight inches to six feet high, of a dark copper complexion, great muscular strength, in good condition, and of excellent figures; we did not see one cripple or defective person, except one boy, whom, after much laughing, they in the most good-humoured way brought to me, saying, 'You ought to be brothers; you have each lost the right eye.' I acknowledged the connexion, and for the future he will be called Captain.

Unhappily the scene is not without alloy. Three Englishmen have arrived, and had wives given to them. Their names are George Hunn Nobbs, John Buffet, and John Evans. The first has married a daughter of Charles Christian, and calls himself pastor, registrar, and schoolmaster; he has sixteen scholars. Two of these titles, however, are claimed by John Buffet,—hence a source of division; and since their arrival, dissension, heretofore an

unknown evil, has appeared. Buffet, a native of Bristol, a ship-wright and joiner, a very useful mechanic, arrived first; he has eight scholars; and to him land has been allotted. Evans enjoys land through his wife, a daughter of John Adams, an heiress. The two last maintain themselves, but Nobbs claims exemption from labour as pastor; by law he is to be maintained by the community. His information is superior to the natives, therefore he wishes to become the chief,—in which he will be disappointed; they do not like a superior. As education increases, also, their minds will expand, when native talent will appear which will claim and obtain superiority. Had the family of Christian possessed but a moderate share of sense, one of its members would have been chief by general consent; but Thursday and Charles Christian, the sons of the mutineer, are ignorant, uneducated persons, unable to maintain superiority. In time, Edward Quintal, the best understanding in the island, will be chief; he possesses no book but the bible, but such knowledge has he drawn from it that he argues from facts stated therein, and thence arrives at conclusions, which will in time place him much above his fellows. His wife, also, possesses a good understanding; and their eldest boy, William, has been so carefully educated, that there is no boy equal to him on the island. The descendants of Young are also promising persons, possessing good understandings.

One of the remarkable circumstances is the correctness of their language and pronunciation. The general language is English; their divine service, also, is in English; but they frequently converse in Otaheitan, the language of the mothers. Two of the women who left Otaheite in the Bounty are alive; both childless, but well taken care of by the others.

The whole island has been portioned amongst the original proprietors, therefore a foreigner cannot obtain land except by marriage or grant. Eleven-twelfths are uncultivated. Yet population increases so rapidly, that in another century the island will be fully peopled. I think one thousand souls would be its limit of inhabitants. The island at present is covered with trees, called the bush, yet only one good well has been discovered. Trees attract rain, and when these are removed the showers of rain will not be so frequent.

Since the death of John Adams, the patriarch, laws have been established against murder, theft, adultery, and removing a landmark. The penalty to the first is death; to the second, three-fold restitution; to the third, for the first offence, whipping to both parties, and marriage within three months,—for the second offence, if the parties refuse to marry, the penalties are forfeiture of lands and

property, and banishment from the island. Offenders are to be tried before three elders, who pronounce sentence.

Marriage and baptism are celebrated according to the rites of the church of England. Confirmation and the Sacrament of the Lord's Supper are unknown to them.

They consider the King of England as their sovereign, and pray for him at divine service. I never was so forcibly impressed with the blessings of a liturgy as I was at Pitcairn's Island. Adams, the patriarch, could read, but until the latter days of his life he could not write; yet, after the slaughter of his shipmates and the Otaheitan men, he reared up all the children in the fear of God, through the instrumentality of the bible and prayer-book. He could not compose prayers, but he could read them to the little assembled flock; he read those beautiful prayers found in the prayer-book of the church of England; from it, also, he taught the catechism, the commandments, and all the Christian duties. So strongly attached are they to this service, that no dissenting minister could be admitted; they draw from it as the well-spring of life, and will not obtain water from another source.

They have only two meals,—breakfast, between ten and eleven o'clock in the forenoon, consisting of yams, potatoes, plantains,—supper, an hour after sunset, is the same; with three times a-week a pig, fowl, or fish, baked as at Otaheite.

John Adams died in March, 1829. During his life all obeyed him as a parent,—"Father" was his only title. Shortly before his death he called the heads of families together, and urged them to appoint a chief; but they looked up to him whilst living, and have appointed none since his death.

Ships may obtain fire-wood at Pitcairn's Island in abundance, with a certain quantity of yams, cocoa-nuts, and plantains, but not a large supply; poultry, pigs, they object to part with; it would be impossible to water a man-of-war, as the water is to be carried from Brown's well on the shoulders of the natives.

The following is a list of plants found at Pitcairn's Island in March, 1830, made by Mr. Andrew Matthews, late chief-clerk to the Horticultural Society, whom I engaged to go with me as botanist. The specimens of some of these may be seen at the British Museum, whither they were sent:—

Introduced.—Artocarpus incisa, Gossypium vitifolium, Poinciana pulcherrima, Gomphrena globosa, Capsicum frutescens, Nicotiana tabacum, Cucurbita citrullus, Cucurbita pepo, Citrus limonum, aurantium.

Indigenous.—Musa paradisiaca, sapientum, Dioscorea sativa and aculeata, Convolvulus Batatas, Cocos nucifera, Ficus indica, Morus chinensis, Dracœna, Hibiscus tiliaceus, Pandanus fasci-

cularis, Arum species, Cucurbita lagenaria, Piper species, Solanum nigrum, Nephrodium, Davilla, Polypodium aureum.

Asplenium	. .	2 species	. .	undescribed.
Polypodium	. .	3 ditto	. .	ditto.
Euphorbia	. .	1 ditto	. .	ditto.
Triumfetta	. .	1 ditto	. .	ditto.
Zingiber	. .	1 ditto	. .	ditto.
Corchorus echinatus	.			
Bumelia	. .	1 ditto	. .	ditto.
Cerbera	. .	1 ditto	. .	ditto.

Tree-fern, one species, fourteen feet in height, not in flower, probably a Cyathea.

His Majesty's Sloop, Comet, at Sea, April 9th, 1831.

SIR,—On my arrival at Port Jackson, in the month of October last, I had the honour to make known to your Excellency that I was especially ordered by Rear-Admiral Sir Edward W. C. R. Owen to communicate and arrange with your Excellency for the removal of the inhabitants of Pitcairn's Island, or such of them as should be found desirous of removing, to the island of Otaheite; which service having been executed, I have now the honour to detail to your Excellency my proceedings in this duty.

Your Excellency having placed the colonial government barque Lucy Anne under my orders, I sailed to the Bay of Islands, in New Zealand, on the 27th December last, at which port we arrived on the 21st January, and both ships having completed their water, we put to sea on the 26th, and arrived off Pitcairn's Island on the 28th February.

Attended by three natives, who came off in their canoes, I landed in the afternoon, accompanied by Captain Walpole, of his Majesty's 39th regiment.

Having made known to the inhabitants the object of the expedition, on the second day I assembled all the heads of families, and having most fully explained to them that they were perfectly at liberty either to remove to Otaheite or remain where they were, I directed Mr. Henry, whom your Excellency appointed to proceed with me, to give them every information in his power, and which he was well calculated to afford, being a son of one of the missionaries of Otaheite, a native of that island, and having been present at the meeting held by King Pomarre and his chiefs, when the promise of land, protection, and assistance was made to Captain Laws, of H.M.S. Satellite, as set forth in his letter to the Secretary of the Admiralty.

One-half of the inhabitants gave in their names immediately as resolved to remove to Otaheite, and on the following day the remainder came to the same resolution.

The whole immediately commenced preparations for embarking, by carrying down to the landing-place potatoes, yams, fruit, and household goods, which were continued to be embarked on board the ships until the 7th, on the morning of which day all the inhabitants were embarked without accident on board the Lucy Anne, being eighty-seven in number, men, women, and children.

Your Excellency will perceive that this service was performed in the short space of four days, the merit of which is entirely due to Lieutenant Peake of this ship, whose zeal and judgment in directing the embarkation, under the great natural difficulties he had to contend with in the face of a most perilous surf, entitle this officer most fully to this public expression of my acknowledgments.

I arrived at Otaheite, and anchored at Papute harbour, on the 23d March, and found the island under the government of Queen Pomarre, daughter of the late King Pomarre, and I regret to say, on the very eve of a civil war. This, however, I have great pleasure in making known to your Excellency, terminated without the opposing parties coming to actual hostilities; and previous to my leaving Otaheite, the governors of provinces, and the chiefs opposed to the queen and her party, having amicably arranged their differences, had retired from Papute to their own provinces with their numerous followers.

Although the island was in this distracted state on my arrival, I was greatly relieved from anxiety respecting the inhabitants of Pitcairn's Island, by receiving from the queen and chiefs on the one side, and the hostile party on the other, assurances that the promises made by her father, the late King Pomarre and them, would be most strictly executed.

I therefore, at the request of the queen, landed the people of Pitcairn's Island at the residence of the queen, about three miles from the anchorage, where houses were provided for them; and at this place they remained until the contending parties had returned to their houses, when the queen gave up for their use a large dwelling belonging to herself in the town of Papute. Previous to their removing, also, a beautiful tract of very rich land, belonging to the government of the island, was well examined by the missionaries, myself, Captain Walpole, and Lieutenant Peake, and determined to be a very eligible territory for their future residence.

The queen, at the same time, assembled the chiefs of districts in my presence, and formally communicated to them that she had assigned this land to the inhabitants of Pitcairn's Island, giving orders also, that her people should immediately commence the construction of houses when they had made selection of a site

suited for a town; and the materials for erecting these houses were in a considerable state of forwardness on my departure.

It will be gratifying to your Excellency to know, that a feeling of great regard was universally manifested to the strangers by the Otaheitans, who anxiously endeavoured to find out those among them who were their relations; in which they were often successful: in one instance, in particular, a woman having come a considerable distance and discovered, in one of the four remaining Otaheitan women, a sister. I mention this in order to show on what grounds I conclude that the change from Pitcairn's Island to Otaheite will be attended with advantage to them.

On my arrival off Pitcairn's Island, I found them exceedingly distressed for water, what they had even being procured with great difficulty; and although the fertility of the island has reared a comparatively numerous population up to the present period, yet this very circumstance, from their increasing numbers, rendered the necessity for emigration more obvious.

I have also the honour to report to your Excellency, that in order to provide for the subsistence of the inhabitants of Pitcairn's island, I concluded a contract for their supply with a sufficient quantity of food for the space of six months, at the expiration of which time, from the information I obtained, they will be in a situation to support themselves on the produce of their own grant of land. Having had no instructions on this head, and his Majesty's vice-consul for the Society Islands being absent, I placed this contract under the superintendence of the three missionaries nearest to their residence, who all agreed most willingly to see it faithfully executed; and for liquidating its expense, I allowed bills to be drawn on the colonial government of New South Wales, addressed to the honourable the colonial secretary; which mode of repaying the contractor I was forced to adopt, in the absence of any government naval-agent in New South Wales, or nearer than the East Indies.

I have the honour, &c.

A. A. Sandilands.

His Majesty's Sloop Challenger, at Sea, 30th May, 1833. (From Captain Freemantle, R.N.)

At Otaheite, I understood that all the Pitcairn islanders had returned to their island, having been assisted by the missionaries and the Europeans on the island to freight* an American vessel to convey them, they being very discontented and unhappy, and a

* It may be remarked, by the way, that many of the copper bolts of the Bounty, which had been brought to Otaheite from Pitcairn's Island by the islanders, were taken by the master of the vessel as part payment for their freight, I believe to the amount of two hundred dollars.

sickness having become prevalent amongst them, which had carried off twelve of their number.

Having, therefore, as far as lay in my power, settled all the complaints which came before me, and tried to impress upon the authorities of Otaheite the necessity of preventing the recurrence of the piracies which have recently taken place among the islands to windward, I proceeded to Pitcairn's Island, off which I arrived after a passage of twelve days. The ship was immediately visited by most of the men of the island, who came out in their canoes to invite the officers on shore; they were all well-dressed, and in every respect had the appearance of Englishmen. I was sorry, however, to find that they were not improved by their visit to Otaheite, but on the contrary, as I had reason to think, were much altered for the worse, having, since their return, indulged in intemperance to a great degree, distilling a spirit from the tee root, which grows in great quantities on the island. I interrogated the most intelligent of the men respecting their return to the island, and they unanimously agreed that they had never been happy or contented since they quitted it, and that nothing would have induced them to do so, excepting the fear of displeasing the British government, which they thought they might have done, had they not profited by the means offered to remove themselves. Now, however, being re-established there, they would ever remain; they had nothing to complain of respecting their treatment at Otahite, but disliked the characters of the people, and were alarmed at the sickness which prevailed among themselves, and which altogether carried off seventeen, five having died since their return. I found on the island a Mr. Joshua Hill, a gentleman nearly seventy years of age, who appears to have come from England expressly to establish himself amongst these people as a kind of pastor and monitor. He had not been on the island more than two or three months, and was officiating as schoolmaster, having quite succeeded in supplanting the Englishman who had acted previously in that situation. He informed me that on his arrival he had found the island in the greatest state of irregularity. He landed on a Sunday, but found most of the islanders intoxicated, and the Englishman "Nobbs," who acted as their pastor, in such a state, from the effects of drunkenness, as to be incapable of performing his duties; he had consequently taken them upon himself, wishing to render as much service as possible to the islanders. And though it appeared to me at first so extraordinary a circumstance, that a gentleman of Mr. Hill's age, and apparent respectability, should come from England for the express purpose of residing on Pitcairn's Island, that I thought he must be some adventurer, more likely to do harm than good in the cause he had undertaken, yet, from the papers which he showed me, and which

proved that he had been in communication with the Admiralty, the Colonial Office, Captain Beechey, and many respectable gentlemen, offering his services in the first instance to remove the people from the island when it was first proposed, I was induced to think he must be interested about them. And as he had succeeded in restoring them to some kind of order, by putting a stop to the intemperance which existed, had broken up all their stills, and had formed them into a "Temperance Society," I gave him all the assistance in my power to support him in his situation; the other Englishman, who had clearly proved himself by his conduct to be unfit for it, I recommended to quit the island, which he promised to do.

The number of people in the island at present is seventy-nine, and there appears to be an abundance of vegetables of every description. They are not themselves either under any alarm respecting a want of water, saying, that as their numbers increase they must dig more reservoirs and wells. With respect to food, I am satisfied the island is capable of supporting nearly a thousand persons; the soil is particularly good, and most part of it being as yet uncultivated, there is little fear of scarcity. On their return from Otaheite they found the island overrun with wild hogs, by which their plantations were destroyed, and they had only just succeeded in hunting these down; but even in their present state they were able to supply the Challenger with a large quantity of yams, potatoes, sweet potatoes, plantains, fowls, with a few pigs; and nothing could exceed the kindness of the people in offering everything they had which they thought would be acceptable.

It is impossible for any person to visit this island without being pleased with a people generally so amiable, though springing from so guilty a stock, and brought up in so extraordinary a manner. And although I have no hesitation in saying, that they have lost much of that simplicity of character which has been observed in them by former visiters, they are still a well-disposed, well-behaved, kind, hospitable people, and, if well-advised and instructed, would be led to anything; but I fear, if much left to themselves, and visited by many ships, which now is not an uncommon occurrence, that they will lose what simplicity they have left, and will partake of the character of their neighbours the Otaheitans. I found even now that it was a most difficult matter to obtain the truth on any point which told at all to their prejudice; and it was only by cross-questioning them that I could arrive at it. The present generation of children is the finest I ever saw; and out of the whole number, seventy-nine, there are fifty-three under twenty years of age, who appear to have been well-instructed, many of them being capable of reading, and nearly on a par with children

of the same age in England. It certainly is desirable that this system of instruction should be kept up, and that a clergyman should be sent to them, who would be most acceptable. The Englishmen who have been on the island have on the contrary done much harm, particularly Buffett, who, although a married man, has seduced one of the young girls, by whom he has two children.

I enclose a list of the articles of which these people are most in want; and from the kindness that has hitherto been shown them by his Majesty's government, it may be hoped that they may be induced to supply them. Some of these articles they require very much. The Challenger took some few things from Sydney for them, but the allowance was so scanty that very little benefit will be felt from it. I remained off the island two days, the ship being under way the whole time, there being no anchorage, and the landing particularly hazardous, so that it is very rarely that a ship's boat ought to attempt it: the natives themselves, however, are very clever with their canoes, and will land in almost any weather. Having given them all the assistance and advice in my power, and arranged their little disputes to the best of my ability, I left this little colony, much prepossessed in their favour by every thing I had seen; and sincerely trusting that they may continue to live in that state of innocence and contentment which they enjoyed previous to their departure from Otaheite,—which it is to be hoped that they may, if they do not return to the use of that spirit which they have so well learned the art of distilling. I obtained a specimen of it; it is not unlike whisky, and very good.

From the above-named Mr. Hill to the Earl of Ripon:—

Pitcairn's Island, 28th December, 1832.

My Lord,—I have the honour to inform your Lordship that I arrived here from Otaheite on the 28th October last, and found the state of things upon this little island very unsettled on my landing, owing principally to the presence of three Englishmen, whom, unfortunately, the natives have allowed to settle among them; they are runaway sailors. Drunkenness, and other bad vices, were introduced by them; and had I not arrived, I know not what might have been the consequence, even before this, as they were in the greatest confusion, from the youngest to the oldest,—fighting, and everything wicked, going on. I have, however, been so fortunate as to put down, in a great degree already, the use of ardent spirits, and the means of making any more of it. I have established, at the outset, a temperance society, and caused the greater number to sign thereto. I have also established a set of laws, as best suited for them, and placed three of the most efficient natives as a committee of elders, to superintend their

affairs; and the only difficulty I have to contend against is the presence of these three bad characters upon the island. I hope that before long one of his Majesty's ships of war may come and take them off, when I should have but little if any difficulty in bringing the natives back again to their duty and best interest.

Although I have, perhaps, effected more than could have been expected in so short a time, under the circumstances, and not possessing any public authority thus to keep in check these men, I shall continue to maintain peace and quietness among them in the best way I can, until I can have the honour of hearing from your Lordship, as to whether his Majesty's government would not be pleased to nominate me its agent for good here, the object being merely to have authority to keep things in order among these poor people. I am now acting as their minister (preaching twice on each Sunday, besides a lecture), their doctor, schoolmaster, &c.; and, with the sanction and assistance of your Lordship, I have no doubt that I could make of these natives one of the most happy people whatever.

I want very much a medicine chest and instruments, and books to accompany it. I have the honour, &c. JOSHUA HILL.

From the same to the same :—

Pitcairn's Island, May, 1833.

His Majesty's ship Challenger, under the command of Captain Freemantle, has just arrived here, last from Otaheite, and previously from Sidney, bringing the duck, soap, &c. which the British government has been so kind as to send for these people, and for which they feel highly grateful. But I lament to say that Captain Freemantle does not feel himself authorized to take off the three Englishmen; which is the more to be regretted as considerable time may elapse before another ship of war may come here. But he has done for the best. I will look forward, and do the best I possibly can in the interval. &c., &c.

J. HILL.

XI.—*Extracts from a Private Journal kept on board H.M.S. Seringapatam, in the Pacific*, 1830. Communicated by Captain the Hon. W. Waldegrave, R.N. Read 24th June, 1833.

MARQUESAS.—*Nouhevah*—The only island we visited was Nouhevah. It is mountainous and rugged, with precipitous sides; the mountains are high, and appear to bar communication to the inhabitants, separated from each other by these high ridges. The whole island is of volcanic origin, and its soil is rich; in the valleys it is clay mixed with vegetable mould; on the hills, it

is thin, growing a coarse grass, in tufts:—this soil appears to be formed from the action of the atmosphere upon the rock.

On the 27th March we anchored in Comptroller's Bay, and were much delighted with the magnificent richness of the scenery, a beautiful harbour facing the south; to the north, steep hills, with undulating ridges, covered with thin verdure from the summit to the sea. Over the village, which is not seen from the anchorage, are cocoa-nut trees and bananas; in the gullies and vales, the natives build their huts, under the shade of their fine trees, which grow there in great luxuriance.

Fifty-six years have passed since Captain Cook visited the Marquesas, and fifteen years have also passed since the Briton touched at Port Anna Maria Nouhevah; Captain Cook, and after him, Captain Pipon, speak in terms of admiration of the figures of these islanders. I confess, however, that I was much disappointed: we saw, probably, four hundred men and about as many women, the inhabitants of Comptroller's and Edmonstone's Bays, and of Port Baker; the men, with few exceptions, were below five feet ten inches in height, and averaged about five feet six or seven, with stout muscular arms and chests, long backs, short thighs, long legs—the legs not muscular; the women, who swam on board, were short, much in-kneed, walked awkwardly, with long backs, short thighs,—the majority under five feet two inches. The tallest man we saw measured six feet and three-quarters of an inch.

The chief . . .	6ft.	0½in.
Another man . .	5	3½
The tallest woman on board	5	5⅛
Another . . .	5	2¾
A third . . .	4	10

Their complexion is a dark copper; the women very much lighter.

During our excursions we saw no cultivation except of tobacco, which was protected by a cane-fence. Their food appeared to be bread-fruit, cocoa-nuts, plantains, fish, and hogs—the latter particularly fine and well-tasted.

Their huts were parallelograms, built on a platform of large stones, raised one or two feet from the ground: they are of wood or cane; the front, a low upright wall, four feet high, with a door in the centre; the opposite side is ten feet high, not upright, but leaning inwards. These walls support the roof, which falls from the upper to the lower wall. The gable-ends are upright; the roof thatched with the leaves of the screw-pine, palm, bread-fruit, and cane, interwoven. The insides are generally divided by a board, lengthways; within this partition the sleeping-mats are spread, and in one corner stand the household cups, troughs, &c of wood.

We saw no sick, except a chief in a consumption, but many were afflicted with a serious cutaneous disease, either confined to particular parts or spread over the whole surface. The oldest man was blind.

The clothing of the men consisted solely of the mara, or waist-cloth; the women were dressed in the tapa, or paper-mulberry cloth, a long piece being knotted over the right shoulder, passing under the left arm, and showing the whole of the left arm, part of the bosom, and neck, but concealing the waist and legs. Some of the more retired wore a piece of cloth on the head, to contain the hair, ornamented with a bandeau of flowers. All the men wore shells in their ears; and a few, wreaths of cock's feathers, besides their arms, war-clubs, and spears.

They appeared to be very indolent, except when employed by us, nature providing most liberally for them without labour. During the day they sat collected in groups, either in their huts or under the shadow of trees; the women lying at length. In this manner they passed the day—sleeping frequently: as we were not on shore during the night, I can say nothing of what passed after sunset: yet this indolence is quite compatible with a warlike people. They are proud of showing their wounds, either of musket-balls or from other weapons. Whilst accompanying us, it gave them great delight to show us how they attacked, defended, or opposed their enemies on the hills.

During our stay our reception was courteous and kind to the last degree. They are extremely honest; sometimes one hundred natives would be on board at the same time, on the upper, main, and lower decks, yet, in five days, we only detected two instances of theft on board and one on shore, in each of which the thief was unsuccessful. In the latter case they assisted to discover the thief. In our excursions they carried many little things for us, and returned them safe, receiving any little reward. They are excellent mimics, imitating any peculiarity of voice or gait, to their and our amusement. In their traffic they were suspicious, never parting with the article until the bargain was made.

Both sexes swam on board naked; every man or boy, who swam on board, had the prepuce of the penis tied with a piece of string, so as to protect the penis from any injury. The instant a woman landed, aprons were made of grass, or of any leaf at hand, which served until they reached the hut, where they dressed.

It was disgusting to witness the lasciviousness of these people. Women swam on board in crowds; and, the instant we landed, they were offered to us in the most unreserved manner. On the beach, near the watering party, sat an elderly man, on his left an elderly woman; on their left, near to them, sat a blooming young woman of eighteen, suckling her child; the old woman

addressed me, saying ‘ Eireeka waheina,’ pointing with one hand to this fine creature, and with the other to a hut: not attending to it, the man repeated the offer in the same words and action. To one of the officers, who stood in a circle of several women, each of them offered herself or her neighbour. Another officer went from hut to hut, to examine them; most were empty—but in one he found an aged man, woman, and two children,—the eldest child was a girl between six and seven years old; the woman first offered the child, saying “ Waheina,” and, he declining, the man brought her next, by signs expressing his consent. Many of the women swam on board towed by some man, but we observed that the same man never accompanied the same woman twice—he was to be paid by any present made to her. We certainly saw some women who sat apart, and were fairer, taller, and of better figures, who were courteous and civil, but modest.

The old men appeared to have been much stronger than the present race. Whilst exploring the hills, the natives would squat twenty times in an hour to rest. Might not this degeneracy arise from the early and promiscuous intercourse of the sexes? Contrasting these natives with the natives of Pitcairn's Island, how marked is the difference in the result of a virtuous and modest life to that of a vicious and immoral one! At Pitcairn's Island the men would carry down or up the cliff a cask containing fourteen gallons of water, or a wheelbarrow of equal weight; no weight appeared to be too great, and no labour to tire them. The Pitcairn women were also tall, well-shaped, modest, civil, and retiring.

We observed marks of musket-balls on the bodies of several of the natives: they were also extremely eager for gunpowder, and at first refused to barter hogs for anything but gunpowder; but I was determined not to give them any. I offered dungaree, hatchets, knives, fish-hooks, in vain—they expressed by signs that the gunpowder was to fight the inhabitants of other islands, but I did not consider myself justified in putting so dreadful an instrument into their power. The day after our arrival in Port Baker, whilst busy watering, a message was sent to me from Lieut. Paulson, who had charge of the watering party, that he observed dissatisfaction amongst the natives because gunpowder was not given. By signs and words they expressed that the wator was theirs, and began to hinder the watering. Immediately the general signal of recall was made, and the natives observed the empty water-casks rolling back to the boats—the officers and men hastening to them—the women and children being at the same time driven from the beach; on which some of the men fled—others remained, assuming an attitude of anger and dismay at the expectation of some

dreadful event. I then went to the beach with presents of hatchets, dungaree, a few of my own shirts, and knives, and sent a sergeant of marines to see if a chief was there; the clergyman joined me—we were carried on shore; the instant they saw me, an elderly man ordered the people to sit down in a circle, three or four deep, a side being left open to the beach. I distributed three hatchets and two shirts, when they sent for the chief, who appeared in a few minutes, looking grave, angry, and disappointed. I presented him with two hatchets and a piece of dungaree; but his countenance not improving, I presented him with a black silk handkerchief, and pulled off my uniform jacket and put it on him. This gave satisfaction. They told me to come to water to-morrow—a pig was given to me—and, on my return on board, a canoe was sent with a present of plantains, cocoa-nuts, and sugar-cane. The following morning, two more pigs and fruits were sent, and the chief came on board, accompanied by his father. After breakfast, he again pressed me to give gunpowder, and offered twenty pigs for a barrel. Upon declining, he requested that a carronade might be fired, to which I objected, and his countenance became clouded. At nine o'clock, I went on shore, and ascended the hill which separates Port Baker from another bay. On my way I was received with great kindness—the women courteous, and in the most winning manner making very liberal offers. I made them several little presents of ribbon, paper, &c.

It is usual for merchant vessels to give muskets and gunpowder in barter. Several muskets were thus seen; and I ascertained, beyond a doubt, that the gunpowder was to be used against a neighbouring tribe, 'Harpais,' in the same island. I declined firing a carronade, lest the effect produced by the shot might induce the chief to demand a gun and ammunition from the first merchant vessel touching at this port.

Mr. Guthrie, the surgeon, from a conversation, carried on by signs and words ill understood, is of opinion, that the island of Nouhevah is inhabited by five tribes of Typees and two of Harpais; that the Typees and Harpais were at war, and were cannibals.

I saw one double canoe which measured twenty of my steps, and was capable of carrying sixty men. At one end were two skulls and two war-clubs; and some shells were fastened to the canoe. A man sat guarding it.

We saw no temple or place of worship, nor any signs of religious worship. We had no interpreter, therefore all our information was obtained by signs or words ill understood; yet I believe that the information here contained is correct.

The timber seen on the island was as follows :—

Timber Trees.—Santalum album (saw only part of the root and stem).
Casuarina equisetifolia.
Ficus species.
Hibiscus tiliaceus.
Swietenia mahagoni (saw only the seed).

Fruit Trees and Esculents.—Cocos nucifera . the Cocoa-nut.
Artocarpus incisa . . . . . . Bread-fruit.
Carica papaya . . . . . . Papaw.
Musa sapientum . . . . . . Banana.
—— paradisiaca . . . . . Plantain.
Caladium sagittifolium . . . Taro.
Convolvulus Batatas . . . . . Sweet potato.

Miscellaneous.—Guilandina bonduc . Morinda citrifolia.
Laurus sp. . . . . . . Ageratum conyzoides.
Coffea sp. . . . . . . Kennedia, sp. *nov.*
Ricinus palma christi . . . Urena, sp. *nov.*
Morus chinensis . . . . . Abrus precatorius.
Nicotiana Tabacum . . . . Convolvulus, 3 sp.
Tabernæmontana coronaria . . Cucumis chate.
Polypodium aureum . . . . 2 species of grass.
Hibiscus rosa sinensis simplex.
——— rosa sinensis duplex.

Society Isles.—*Otaheite*—The form of government is an absolute despotism, the king or queen possessing a most absolute power over the land in the islands.

The islands acknowledging the sway of Queen Pomarre are Otaheite and Eimeo (Raiatea, Huaheine, and Bona-bona being independent) ; her revenue consists of taxes of cloth, oil, pigs, and arrow-root. She has generally a large retinue, and with these maintains her court: she is sixteen years of age, is married, and a Christian, but has no children.

The religion is the Christian ; they are ignorant of sects, and worship in the Presbyterian form ; the majority, excepting the court and the inhabitants of Papeete, are strict in their observance of Christian duties ; the queen is young, and irreligious : the inhabitants of Papeete abandon themselves to the sensuality of a sea-port.

The land was always the absolute property of the king or queen ; his word or order could displace and place any chief or person in any district or spot—no question was ever made of the propriety, but each obeyed ; and each chief also possessed the same absolute power over the land of each individual living in his district,—he could remove, banish the occupier, and put others in his place, or take it to himself ; the king having, however, a supreme power over chief and tenant.

The laws of the person and chattel property have been established since the conversion of the islands to Christianity. They were adopted in full assembly of the chiefs and people, assisted by the missionaries, who digested and wrote them. They are derived from the Pentateuch, and regard robbery, adultery, removing landmarks, &c. They are headed by a declaration of the islands subject to them, of the districts and other divisions and subdivisions, the governors, judges, and constables of each district, village, and place.

An offender against the law is seized by the constable, who takes him and the witnesses before the judges, who publicly convict or acquit the prisoner. The punishments are, repairing the highways, making cloth, forfeiture of hogs, whipping, banishment—for murder, banishment. These laws have, in some measure, outrun the knowledge of the Otaheitans, but they are daily becoming better informed, and appear to be well pleased with them. No law exists restraining the power of the king over the land: a few years must pass before any law on this subject can be received, as the people are not ripe for it; but until a law passes giving a title to land in the proper owner, no great step can be made in commerce.

Population.—Turaboo, 2000; Otaheite, 5000; Eimeo, 1300; Huaheine, 2000; Raiatea, 1700; Bona-bona, 1800; Tahaa, 1000; Menra, 1000; by a census made by the missionaries, 1828.

It is lamentable to compare these returns with the supposed returns of Captain Cook fifty years ago; but the vices of the people were such, that nothing but the abandonment of Paganism, and the conversion to Christianity, could have saved the remnant. The venereal disease has assisted in some small degree, but infanticide was practised to such an extent, particularly of the females, that nothing could have saved the remnant except Christianity. To a question put by myself to Hitoti the chief, about Viratoa, the chief of Tiaraboo—'Had not the chief more children than this one son and daughter of whom he is so proud?'—'Yes, tens and tens.' 'Where are they?'—'All destroyed.' The reason usually assigned was to render the women more pleasing. Abortion also was practised. The males at Otaheite at present far exceed the females in number. We saw many children and young persons, but very few above fifty years of age.

These islands could produce anything that will grow within the tropics, but until a change takes place in the habits and dispositions of the people, no trade can thrive. The missionaries have planted cotton, and the produce is of the first quality, but they could not command labour. The indolence of the natives was such,

and they demanded a price so enormous for their work, that the culture was abandoned. The same observation applies to indigo, tobacco, and the sugar-cane; but with a tuberous-rooted herbaceous plant, which they call arrow-root, and which grows without cultivation, they are more industrious. In the beginning of May they range the country in search of this, and dig up its roots. These they wash, rasp, and dry in the sun, and carry them to the purchaser for sale. Even with this, however, their indolence makes them often hurry the preparation, so that they will offer it for sale when but ill dried; yet the root of itself is excellent, and can be exported at threepence per pound. In one year forty-two tons were sent from Raiatea to New South Wales.

There are two plantations of sugar-cane—one on the north side, between Paré and Papeeti, owned by Mr. Bicknell, an Englishman, cultivated by natives, and growing annually from five to ten tons of sugar, which is sold wholesale at ten dollars the hundred. The other, on the south side, is cultivated jointly by Captain Henry and Tarti. This plantation was but ill attended, the owner having gone in search of sandal-wood: the labourers were inhabitants of Tongataboo, who, when properly directed, will work steadily. The sugar produced was not equal to Mr. Bicknell's, although the advantages in situation were greater.

At Eimeo, under the direction of Mr. Armitage, a missionary artisan, a cotton factory was commenced, but failed from the difficulty of instructing the natives in the detail. He has since commenced one on a more simple plan, and I trust will succeed; he induces the natives to grow the cotton and bring it to him; they prepare, spin, and weave it under his direction, and receive the cloth for their own use. The few who have tried this plan, and received the cotton cloth, are much pleased with the possession. We saw in the spinning-house fifteen girls, and were told that an equal number of boys attended the factory.

Rope is made at Eimeo under the direction of a Mr. Simpson, missionary, from the bark of the hibiscus. Accounts differed as to its qualities, some reporting its excellence, others its ill qualities; but, after a smart discussion, I conclude that the defects preponderate, the fault lying in the indolence of the manufacturers, who do not carefully attend to select the inner bark, and lay up strips of unequal thickness. No tar or other liquid is used with it.

Two vessels have been built on this island, one for the use of the missionaries, the other for purposes of trade. They were built by European or American workmen, assisted by Otaheitans, who felled the timber. I can say nothing as to their qualities, as I did not see them. The missionaries speak of the excellence

of the timber. Another vessel was preparing at Mirapaie for Captain Henry and Tarti.

Tappa or cloth is made, as in all the South Sea Islands, of the inner bark of the hibiscus, bread-fruit, and paper mulberry tree.

Oil is prepared from the cocoa-nuts, by letting them remain on the tree until quite ripe; then the shell is divided, the nut scraped out, put into heaps in canoes, and, after fermentation, the heap is occasionally pressed by hand, when it gives out an oil which they use for general purposes of light.

No real or profitable commerce can exist until real property is secure by law. Barter exists for hogs and fire-wood in exchange for calicoes, dungaree, spirits.

The island of Otaheite possesses about three hundred head of horned cattle of various ages, the missionaries possessing the greater proportion, though a few chiefs are beginning to have breeds, and the stock will soon be in many hands. The cattle were imported by the missionaries from New South Wales, and are of a particularly fine sort, very fat, and well flavoured, weighing from 8 to 12 cwt.

Horses are few, there being not above fifteen in the whole island, imported from Valparaiso. The queen had two very fine colts.

Goats thrive well, are numerous, and would be more so, were they not destroyed by the dogs. Sheep do not thrive so well; their wool becomes entangled in the long grass, and the lambs are destroyed by dogs; the feed also is too gross; a short bite is not to be met with, the island being understocked.

Pigs thrive, living almost wild on the guavas, cocoa-nuts, and sweet potato. They grow exceedingly large and good.

The churches, with one exception, and the houses of the missionaries, are built of wooden frames, filled with wattled hibiscus, and covered with a compost of sea-sand and lime, which again is whitewashed. The doors are plain framed, and the windows are framed with blinds, but few have glass sashes. The usual shape of the churches is a long oval, the roof of thatch, supported by two upright posts of the bread-fruit tree, placed near the extremities of the oval, on which rests a ridge pole, one end of the rafters resting on the wall, the other against the ridge pole; they are smooth, white, and when new have a very neat appearance. On the floor of bread-fruit plank are arranged seats of the same shape and size as are usual in country churches in England; some few have also a gallery at each end. The service is performed with great order and reverence, and the singing is in correct time; but the key is so high as to make it harsh and unpleasant to Englishmen.

The habitations of the natives are very simple; oval or oblong,

as most convenient, according to the size of the family. The sides are made of young bamboos, placed perpendicularly, so as freely to admit the air: the side exposed to the weather is in a small degree protected by the leaves of the cocoa-nut tree interwoven. There is one door in the centre.

In few huts is there any furniture, the natives sleeping on mats placed on the ground, one mat under, one above them, covering every part of the body from insects. Cocoa-nut shells and gourds are the only vessels. Food is always dressed either in the open air or in an adjoining shed. Pigs, poultry, and vegetables are baked in a hole made in the earth, in which a strong fire has been made; when the stones are heated, the fire is removed, and the food is placed on the stones, covered above and beneath by fresh green leaves. The cooking is excellent. A few of the chiefs had plastered houses, like the missionaries, with one or two chairs, or a sofa, chests, and tables. Tarti entertained us with chicken-soup in a tureen, pancakes, plates, knives, forks, and spoons. He was the most enterprising chief of the island—and this case was singular; I was in most of their houses, which are dirty and neglected.

The bridges are wooden logs thrown across a rivulet, and are so often washed away by the flood that it is uncertain, until at the bank, whether you are to wade or cross on a log.

Courts of justice are sometimes held in the open air, before the church, or a chief's house, or in a large building prepared to hold the court.

There is no currency; Spanish dollars are known, but their European or American value is unknown. For instance, a quart bottle of bad spirits, two yards of sixpenny calico, or of one shilling a yard dungaree, or a yard and a half of broad ribbon, are considered equal to a dollar, the value of which at Sydney is fifty-two pence.

The principal chiefs are—Outamun, nearest to the blood-royal; Hitoti, Parfai, brothers, the latter secretary of state; Tarti, and Viasatoa. The four first are intelligent, respectable men, and sincere Christians; they are treated with much respect and possess great influence. Hitoti had the kindness to steer my gig round the island; and to him and to the missionaries we were indebted for much hospitality and attention shown to us. He spoke a few words in English, and from him I learned the names of the villages, streams, bays, tribes, &c., which we passed. He introduced me to his own and Parfai's wife at Tiavi. Their houses were clean, and themselves neatly dressed in straw bonnets with ribbons and European calico vests. Hitoti is a large landed proprietor, and had changed his residence from time to time to be near a missionary. His house at Tiavi was small, and consisted of two rooms,

one a sleeping-room, the other a dressing-room. His servants occupied another house. Parfai's was larger, equally clean, with a pounded coral floor, a few chests, and other furniture. The brothers were building a decked boat, of nineteen tons, of native wood; the work was good, and he was very proud of it. He showed me the frame of the new church, which was well constructed. When I remarked that I hoped soon to hear that they were building stone churches and stone houses, he replied, "One step at a time—we cannot go so fast." Stone is found in great abundance, either of volcanic rock or of coral, and the coral burns into excellent lime; but a second work of such magnitude probably is too much to expect of the Otaheitans. A stone octagon church was built at Papetoai, island of Eimeo, of heron coral. The labour was extreme, and it was some years in building.

The island produces excellent timber in very great abundance. It is to be found in the interior, on the south side, and all over Tiarabooa.

Native name—Maivre. *Linnean*—Artocarpus incisa. This timber is used for making canoes, planks, upright timbers in churches, paddles; a light and soft wood, soon perishes.

Native name—Tumanu, or Ati. *Linnean*—Calophyllum Inophyllum—with close grain, of a mahogany colour, distinctly veined; used as timbers for ship-building and general purposes. The most useful wood in the island—very plentiful.

Native name—Toi. *Linnean*—Cordia sebestena.—A fine-grained wood, fit for joiners' and cabinet-makers' work; used for the inside of cabins.

Native name—Amaa-mus. *Linnean*—Hibiscus sp.; used for timbers and knees of vessels.

Native name—Hutu. *Linnean*—Barringtonia speciosa—for timbers and plank—scarce.

Native name.—Pureau. *Linnean*—Hibiscus tiliaceus—for planks, knees, and timber; a light, soft grain,—very ordinary: its principal use is for rafters, for which purpose the young and luxuriant shoots are used, stripped of their bark. Very plentiful. Cordage is also made from its inner bark.

Native name—Ailo (iron wood). *Linnean*—Casuarina equisetifolia; a hard, heavy, close-grained wood; used for treenails. One of the best timber trees—of large size, and in great abundance.

Native name—Apape; for masts, planks, and general use.

Native name—Mara; for keels.

Native name—Faifai; for masts, planks, and general use.

Native name—Mape. *Linnean*—Inocarpus edulis; a large tree—soft wood, of little value.

Linneun—Ficus tinctoria; small timber tree: used in dyeing, and for fire-wood.

Linnean—Ficus Indica—one of the largest trees; but useless.

Linnean—Tournefortia—a large tree, and scarce.

Raiatea.—Raiatea is an independent island. The king, Tomatoa, is maternal grandfather to Pomarre, queen of Otaheite. The island acknowledges a political union, but does not admit of the supremacy of the latter: its population is about 1700, and rapidly on the increase. The religion is Christian; and the spot where the king resides has been fixed as the seat of the mission. The harbour is excellent; but the situation of the village is low and swampy; it was chosen as being the central point of convenience for both sides of the island, and for the inhabitants of Tahaa. Another spot was selected, eight miles to the south, where the land was higher, drier, and the valley or low ground between the sea and the mountain much wider; but it was suited solely to the inhabitants on the east face, not to the western face, therefore it was abandoned. The outward appearance of the houses is better than at Otaheite, being white-limed and plastered; but the inside is equally filthy.

The people are indolent, yet, through the persevering activity of the missionary, Mr. Williams, they have made greater advances towards industry than on any of the three other islands. They have built seven vessels of forty tons, which are in use at this moment, but two want paint and pitch, which causes a premature decay. The vessels are entirely built of native timber; and the rope is also indigenous. The iron is imported. They export a considerable quantity of good arrow-root: one year they sold forty tons—this year, thirty tons have been already sold. When exported to Sidney, it fetches three-pence per pound wholesale.

Before taking leave of the Society Isles, I shall endeavour to give my opinion as to the religion, morals, &c. of these people.

Every navigator has described them as warlike, effeminate, indolent, lascivious, addicted to thieving; and now that they have become Christians, inquiry is made in what have they improved? The answer will be, that the sum of crime is much diminished, although the tenets of the Gospel have not in many taken deep root; infanticide has ceased; wars have ceased; women are considered as equal, not inferior to men; the children are more regarded by their parents; the women possess an influence over their husbands, which causes them to be treated with attention, lest the husband should lose the wife, as she would soon find a husband ready to receive her, and treat her with more kindness;

and the result of this is, that infidelity is more common amongst the women than amongst the men, the attachment being stronger on the male than the female side. Jealousy is felt powerfully by the Otaheitans for adulteries committed amongst themselves; but it is supposed that a woman never receives the embraces of a foreigner except with the consent, and for the gain of the husband. During the day all are decorous; but after dark, women are to be met with, waiting to entice; and husband and father are alike ready to offer their wife or daughter. At Raiatea, the queen's mother not only indulged herself in this crime, but was the common procuress, receiving the profits. The house of the queen of Otaheite was, in like manner, the scene of the most abandoned profligacy. Pomarre, the king, a large young man of eighteen, sat in the room, a witness to, and indifferent to, the addresses paid to his wife, or the open debauchery of his mother-in-law: and every wanton and abandoned woman was to be here met with, ready to receive the embraces of any. As the offenders are young persons, encouraged by the elder, I see no human probability of improvement, unless the queen of Otaheite, her mother, and aunt could be put aside, as they are protectors of the abandoned and profligate, in defiance of the laws.

The chiefs of Otaheite, Eimeo, Huaheine, and Raiatea appeared to be sincere in their religion; and the majority testified it by the correctness of their lives, and the support they gave to the missionaries. Their authority is much limited by the new religion; yet, in conversation, they confess how much happier they now are, in meeting each other in peace and in friendly visits, than they were during the reign of paganism and of war.

The missionaries are men of correct lives, and much devoted to the duties of their service. To them these islands are accordingly much indebted, not only for the blessings of the gospel, but for the good example they have shown, and the arts they have introduced. Their wives appeared also to be admirably suited to their stations—seconded their husbands by their attention to domestic duties and the care of the children. But the missionaries are all engaged in trade, which I am afraid interferes in some degree with their usefulness. At present they have the monopoly of cattle, so that the shipping are almost wholly supplied with fresh beef by them. They also appeared to deal in cocoa-nut oil and arrow-root. To myself the natives were not very communicative; but from the little I saw of the consequences of this, I was persuaded that it was not beneficial.

Mr. Williams has instructed them in ship-building and rope-making; Messrs. Blossom and Armitage in cotton-spinning, weaving, carpenters' and joiners' work. Tobacco and cotton were

planted, succeeded, but at present do not exist—except as specimens in gardens or private use—indigo. A mystery hung about all these attempts, which, from my ignorance of Otaheitans, I could never resolve. The missionaries for their own use make excellent soap, yet not a native can, or does make any; the ingredients, cocoa-nut oil, wood, ashes, and lime, are in the greatest abundance. Mr. Nott broadly states that no trade or cultivation can exist, as labour cannot be purchased or commanded. Our stay was too limited to judge of the correctness of this statement: but in idle employments, as guides, pilots, searchers for food or shells, we found many ready to assist. We met also with six carpenters, and some rope-makers, but no stone-masons or other mechanics. One trading vessel arrived while we were there—a French brig, belonging to the firm of Green and Molineux, Valparaiso; Mr. Molineux was on board, and I conversed with him: he was purchasing cocoa-nut oil, arrow-root, tumanu wood, and sugar, with ribbons, cloth, &c.; he appeared to have employed the missionaries as agents to collect these articles for him, and thus again the missionaries appeared as sole middlemen between the natives and the purchaser. At Otaheite, a Spanish dollar, a bottle of rum or brandy, a fathom of shilling calico, were deemed equivalent. I proposed to the missionaries to write a letter stating what articles were equivalent at Sidney and Valparaiso, but an objection was made, saying that the value of each article was known, but custom decided against the adoption of a better scale.

At Raiatea, clothes, not money nor rum, were desired in payment for washing, shells, or mats. The people were in general well clothed in calico shirts, the women in silk ribbons, English and Chinese shawls, &c. Each missionary had a store of ironmongery and haberdashery, and all were in good circumstances, possessing property in some shape, and appearing eager and ready to trade.

The people are clean in their persons, washing twice each day or oftener, yet their huts are wretched, situated in swamps or bogs, made of cane, with thatched roofs without, and within untidy, with very little furniture. The mat spread on the plucked grass makes a sort of field-bed for the family; few possess a bedstead or other comforts. A reason given for the inattention to garden cultivation was, 'that custom permitted the idle to take a share of the crop of the industrious,' so that the instant a crop was seen, a message from a chief arrived, asking for a portion; and if this was refused, a part or the whole was openly taken from the grower.

At the moment we arrived, the islands appeared to be in a middle or conflicting state, between the habits and customs of

idolatry and the infused but dark knowledge of their rights by the written law. The chiefs were claiming the prerogatives of the former state, which were assented to or refused, according to the ignorance or information of the vassal.

I was told that the Missionary Society in England had thoughts of withdrawing their missions from the Society Islands, beeause they were Christians, and ought to raise native clergy; and that their funds might be applied to heathen countries. But at present the people are not ripe for this great change, and it would be cruel to attempt it. They are not fit to go alone; they would not at present respect a native teacher; neither would they maintain a native in the same manner as they build for and feed the British missionary: nor would it be well to attempt it until the prerogatives of the chiefs, and the rights of the people, as to property and person, are well established and acknowledged by written laws.

A strange anomaly exists in the history of Otaheite, which at first surprises and perplexes the stranger, and induces him to draw unfavourable conclusions respecting the missionaries; but on inquiry and further intercourse, this is found to arise from habits and circumstances over which the missionaries have no control. Thirty-four years have passed since the first missionaries landed; they were treated with every contempt which ridicule, vice, and folly could heap upon them; and the lame, the blind, the humpbacked, were brought to them, in irony, to heal: but they persevered. When their European clothes were worn out, barefooted and bareheaded, clothed in the tappa, they crossed rivers, penetrated valleys, and descended mountains, to preach Christ crucified; yet, for nineteen years, their labours appeared to be in vain. In the twentieth year, however, some persons of influence listened, and declared their belief. Wars existed, and the effects were severely felt, until it was observed that the Christians did not pursue to death the wives and children of the conquered, as others did. After several defeats, Pomarre, a powerful chief, embraced Christianity, and with him, the whole island, in obedience to his will, adopted the Christian religion. It was only, however, a state-conversion, not understood, therefore not sincere. The idols were burnt, and the morais destroyed and polluted; yet, though paganism disappeared, Christianity was not felt. For a few years they were outwardly decorous; the distillation of spirits ceased, and honesty was visible—for property might be left on the shore and would not be touched, unless to restore it. Pomarre was a man of talent. He cast off, all his wives but one; yet he indulged in drinking to excess. His government was strong, and he was obeyed. At his death, a boy succeeded to the command: the

regent was a sensible, intelligent man, who consulted much with Mr. Notts. But this prince died at seven years old; and his sister now reigns, who is married, and yet indulges in the lowest sensual gratifications. She is frequently diseased; and is obeyed, but spoken of with great disrespect. Her example is producing injurious effects, as she lives in the society of forty or fifty persons of the same taste as herself.

Thus it is that the anomaly exists. The principal chiefs are sincere in their religion, but the mass of the people are not influenced, except to an external observance of Christianity. The majority attend the church, and are attentive, sing the hymns, and show every mark of devotion. They have also destroyed the spirit-stills, but will get drunk whenever they can obtain liquor. I helped an old chief to half a pint of rum, and he drank that, and in two hours another half-pint, without any apparent effect. I inquired the cause, and was answered, that the ava was an intoxicating sedative, whose effects soon ceased; that they drank spirits to produce this effect, as they cannot understand the use of spirits except to produce such an effect. Yet Hitoti, Parfai, and Tarti dined frequently with me, and drank wine as usual in Europe.

I saw every missionary in Otaheite, Eimeo, and Raiatea, and can truly affirm that they are all respected and loved, as teachers of good; and that they are considered as pastors. It has been asserted that the natives are jealous of them as cultivators of land, and destroy the crops in their gardens, lest they should possess enough to sell to the shipping: but, on inquiry, it appeared that the thefts arose from anxiety to enjoy the vegetable, and that the attack was not directed against the individual or the missionaries. Every one possesses a pig, yet he prefers selling to using it, because custom compels him to share it with his neighbours. If sold, he alone receives the price.

There is a depraved class to be found at every port, called Toute Ouree, or rusty iron, who observe no religion, and are very depraved.

They have no wish for wars, but appeared happy in their present peace and enjoyment.

They are indolent from disposition as well as from the little necessity for exertion, food being so plentiful; whether necessity will create a change, when a more abundant population presses upon the means of subsistence, I cannot say. Fishing they pursue with steadiness. In our excursions, the natives appeared to suffer much more fatigue from the walk than we did. They could not understand the unceasing occupation of a man-of-war: "The mouth is always open," one said to me, "there is no rest."

Corpulency is considered a beauty, and a fair complexion is much admired: both of these attainments are sought for by keeping within doors, and doing nothing.

We heard no music; and even psalmody was without music: but one night I heard two women sing a ditty in a very pleasing, soft style.

We saw no dancing, wrestling, or athletic exercises. I never saw a man dig or plant; but I have seen them gather the vegetable, cook, and assist to carry and eat the food. The day was passed in sleeping, lolling, or talking, unless the hut required thatching or repairing, In our boat excursions, in only one instance did I ever see a native touch an oar, although the boat's crew had rowed for a considerable time. In a whale-boat, solely manned by natives, this indolence prevailed, although occasionally they would row with great vigour: of five oars, three were commonly at rest for some trifling reason.

The men dress partly in European clothes, but more frequently in tapas, of a square shape, with a slit in the centre, through which the head passes; the cloth hangs loose before and behind, and under it is a waist-girdle of many folds, passing round the loins; with a short petticoat before and behind, dropping to the knees. The women dress on gala days in a calico shift, closely buttoned to the neck, entirely concealing the figure; with a white straw bonnet, edged with red ribbon. The week-day dress is the same, but of native cloth. The men search for and dress the food, which consists of cocoa-nut, tara, bread-fruit, plantain, and arrow-root. The women make the cloth.

It is to be regretted that their huts are placed in low, damp spots; but custom induces them to live in the centre of their land, near the sea. The missionaries tried to have their houses built on an ascent, but found the servants would not stay, as they would not go any distance for water, and would be near their friends; so they were compelled to return to the flat.

In the missionary report we saw the names of Bogue's, Haweis', Griffin's Towns, &c. Nothing can be more absurd than thus to give names to towns that do not exist. On every level spot near the sea, huts are built, but each in the centre of the owner's own land, so that no street can or does exist. The town of Utenon is the only exception to this. A town implies order in building, with a street or road through its centre, but here the houses are scattered in every direction, without a road or street passing near to them; nothing but a path, which is either wet or dry, according to the weather. They have no wheelbarrows, carts, or other vehicles, on which to carry burthens; nor will they adopt them: hence the difficulty of building stone houses, and hence also the

want of public highways beyond the width of four feet, which stop at a brook or diverge, as suits convenience.

Tonga Islands.—*Tonga.*—Tonga is governed by two kings and eleven chiefs. The king, Touetonga, is a pagan; he was partly instructed in the Christian religion, but relapsed, in dread of losing his power. He is a young man, about thirty; presides over all ceremonies, and is acknowledged as superior, being considered as descended from the spirit; but his power is only nominal, as he is not permitted to fight or command in war, or to give counsel. It is the duty of the people to respect him, and to provide for him food, houses, wives, or concubines. He is a state king. He lives at Mona.

The next to him is Touboutini, a Christian, elected war-king: superior in war and in council, he leads the armies, makes treaties, makes peace: is of middle age, approaching fifty; and appears to be of mild character,—slow, easily led, and disliking war. He dined with me twice. When applied to for advice, he gave an opinion, but requested that the advice might not be quoted as his on shore. The people did not pay him that respect which Finou received at Vavao. He has lost much of his authority by his conversion; and is the only chief, except Too-boo-too-tie, his nephew, who has thus embraced Christianity. The uncle attends the class-meetings, but objects to meet any one but his ministers in the class. The nephew declines to attend the class. The missionaries were ignorant of the law respecting land, therefore I could only gather information from the resident sailors, James Read, who had lived eight years at Tonga, and Thomas Wright, a pardoned convict, late servant to the missionaries, who had resided there five years; both serving as interpreters to Too-boo-too-tie. They state that Touetonga is considered as sole proprietor of the island—the chiefs holding under him; but that he could not displace a chief from his land. The island is divided into thirteen portions, a chief being the proprietor of each;—the inferior chief, the mataboule, or persons between the inferior chiefs and the peasants, and the peasant residing on the lands given to him by the chief. The chief can and frequently does displace the peasants; claiming also an arbitrary portion of the produce of the soil, or of the pigs. There are no taxes, but the chief sends for that portion of the vassal's pigs or yams which he desires. The same occurs also in Tapa.

The kings and chiefs reserve a portion of land for their own use, for raising vegetables. Land seems to be acquired by right of conquest, consequently can be lost by the same means. Too-boo-too-tie had lost his land in war; and Tovoufa, a chief re-

siding at Tabaira, was an inferior chief, who by his skill in war had acquired Tabaira and much land. He was more dreaded than any other chief. How this transfer agrees with the vassalage to Touetonga I do not know.

The population of Tonga was stated to me to be twelve thousand; having been much diminished by wars, which were represented as very frequent; although neither Brown, at Vavao, nor Read, at Mona, had ever assisted. They are cannibals, eating their enemies: Read remembered several persons taken in battle to have been eaten.

The island is in a great measure cultivated, and the cultivation will increase as the demand for the supply of shipping increases. Yet my officers saw many tracts in Tonga, and more in Vavao, that were waste. The soil in these islands is superior to the soil of the Society Islands: but Tonga is so flat, that no bird's-eye view can be taken of it; and the view is everywhere very much confined, as the trees are numerous and thick. The trees at Tonga are not so fine as at Vavao, because the soil rests directly on the coral rock, and is not so deep; the yam, plantain, banana, tara, and sugar-cane, of great size and richness, used only for eating, are cultivated, as is the kava: the shaddock is not much esteemed. Cocoa-nut milk is the chief drink, as the wells are merely tide wells, which increase and diminish with the rise and fall. The water is brackish, and is rarely used by the natives, except for kava or bathing.

The women appear to be happy and respected; their duties are the care of the children and the manufacture of tapa and dresses. When I visited the huts in the morning, I usually found the mother sitting in the middle of her clean hut, surrounded by her children, occupied with the tapa. I found several converts employed in copying histories from the bible, or hymns. They acquire the knowledge of writing and reading with great facility: their continued leisure gives much opportunity for these acquirements.

In our tour through these islands we had great reason to admire the general accuracy of Captain Cook;—his description of the houses, fences, manners of the Hapais, &c. is correct to the present day. His spelling of names and words is frequently wrong, but this error has been ascertained by the longer residence of English in these islands. I am of opinion, that the Feenou of 1775 dissuaded Captain Cook from visiting Vavao, solely to keep him ignorant of its superiority over the other islands. Mariner's description of a kava feast is exact; so are his descriptions of the fortresses of Nicolofaa and Fellatoa. I could add more, but the account would be a repetition of Captain Cook's observations.

I can say nothing of their religion, as I made no inquiry about

their religious opinions. The missionaries, Messrs. Turner and Cross, Wesleyans, resided at Nicolofaa, in houses built by order of Touboutini, the king. A new chapel was building for them in the most elevated spot in the island, in the late fortress of Nicolofaa; if white-washed, it will be an excellent sea-mark. They are hardworking, industrious teachers, and of good private characters; but are ignorant of their own language. Their congregation consists of about three hundred persons, and is said to be slowly increasing. They do not interfere in any questions amongst the natives, but confine themselves to their religious duties. They are not traders. I cautioned them against proposing laws to the natives.

Roads extended from one end of the island to the other, and were in general good; about five feet wide.

We heard of ten bullocks, but did not see them; one was killed whilst we were there, and we received a quarter, which was excellent. Pigs and poultry were to us abundant, not so to the natives. The chiefs enjoy meat or poultry daily, but the peasant only tastes it on feast days.

There is no trade. The sugar-cane and arrow-root are grown solely for domestic use: we saw the tobacco plant. Sinnet, of the husk of cocoa-nut, is made, exported to New South Wales, and, we were told, sold for forty pounds the ton at Sidney, to make rope.

Provisions, namely, hogs, yams, and bananas, can be procured in great plenty, particularly the two last. The cost to government of the hogs used by the crew was one halfpenny the pound; for vegetables, one farthing the pound.

There is no currency: the Spanish dollar has been seen, but its value is unknown. No currency can exist without domestic or foreign trade; and in these islands there is neither; every man grows his own food, makes his own cloth, builds his house, and makes his tools. We purchased everything by barter; giving table-knives, with sharp points, for hogs; chisels and blue beads for shells: but the article in the greatest estimation is the coloured printed Manchester goods, of gaudy patterns. Any cutlery but needles, gouges, gimblets, or saws (except cross-cut), was of no value; scissors and blunt-ended knives were in doubtful estimation; small hatchets, worth little; but felling axes and adzes were much prized.

On the 27th May, 1830, we were present at a feast given by Parton, chief of Morce, to Touetonga, chief king of Tougataboo, upon occasion of his return from a visit to the Harpais. At 9 A.M., Touetonga was seated under the large kava-house, an oval building, open on all sides, with his officers arranged on either

side. An aged female sat a little on his right, to attend on him. The building stood not quite in the centre of an inclosure. In front, about fifty yards from Touetonga, were placed two large kava-bowls, on each side of which, in a semicircle, sat the chiefs and principal persons; behind them sat the others. A staff-bearer, on the left of Touetonga, ordered each cup of kava, as it was filled, to be carried to some person whose name was announced: the kava-bearers presented the cup squatting. After the kava was finished, a game was played by two parties of chiefs, twenty chiefs on each side, Touetonga being one: the game was to pitch spears perpendicularly into an upright post of screw-pine, of a foot diameter. The first player threw his spear horizontally, the second and the others threw theirs to fall point downwards. It requires considerable skill; out of twenty, only five succeeded: the other side succeeded in fixing about an equal number. The game was thirty; but neither side obtained the number, although they had repeated innings. Touetonga fixed one spear, and Parton two. The thrower stands about five yards from the mark, and the art is to cause the spear to fall perpendicularly on the mark. When the game was over, the pigs were brought into the inclosure, and counted. Touetonga being seated as at first, they were distributed: we received four, with yams in proportion. After dinner, the dancers practised; and after dark we again assembled in the inclosure, which was lighted by torch-bearers. The chorus sat in the centre of a circle, consisting of from thirty to forty men: the leader had three hollow bamboos placed on the ground, on which he beat; others made the base by striking bamboos, closed at the lower end, perpendicularly on the ground; another part clapped their hands like cymbals: the leader sang a tenor note to the tune, which note sounded without cessation. I tried in vain to learn how this was performed; the time was perfect, the voices in exact cadence. During five hours the chorus was only changed twice. The dancing commenced by the women standing in a circle, facing the chorus, keeping exact time to the chorus, which they accompanied with a song. The hands and head were in perpetual motion, of the most graceful attitude, occasionally curtseying or turning half or quite round. Eighty women performed in each dance; and each moved the hand at the same instant, in the same attitude. The tune was changed from slow to quick, by degrees, until it was very quick; the whole body from the feet upwards was in motion: it ended in a shout.

Another dance, of an equal number of women, followed, which was succeeded by four dances of men; the only difference was, that the men frequently danced with their feet, the women scarcely moved their feet off the ground. The whole sight was delightful.

The women were clothed from the waist downwards, the arms and bosom bare, displaying their beautiful busts; the lower dress was tasty and beautiful, consisting of folds of tapa, ornamented with beads and flowers. It afforded us great pleasure to attend their dressing; and it amused them not a little to see us examining the ornaments as they were brought by dressers. The women are modest, but very courteous. We admired every ornament, until, to complete the dress, quantities of cocoa-nut oil, perfumed with sandal-wood, were lavished over the head, arms, neck, and part of the body. Parton's daughter led one dance, his wife another; each about fifteen years old, and very handsome. Touetonga led one dance of men; his son, a boy of eleven years, another. It requires some strength to sing and dance at the same moment, particularly towards the end. I accompanied the song the last quarter of an hour, and was fatigued, although sitting. The men were clothed except the arms, and each appeared in uniform except the leaders. The quantity of tapa round the waist was so great as to entirely destroy the figure in both sexes, projecting in part at least six inches beyond the body. At half-past eleven the dance ended.

Timber Trees.

Native Names.	Linnean Names.
Me	Artocarpus incisa.
,, ...	Calophyllum Inophyllum.
,, ...	Cordia sebestena.
,, ...	Hibiscus sp.
,, ...	Barringtonia speciosa.
Tou	Hibiscus tiliaceus.
Toa	Casuarina muricata.
Tfe	Inocarpus edulis.
,, ...	Ficus tinctoria.
Ovāvā	Ficus indica, very large.
,, ...	Tournefortia species.
,, ...	Hernandia do.

Rhus Javanica,—this is peculiar to these islands; is very common, and of large size, but useless as a timber tree.

Mawla, or Awla, a large tree,—wood solid, and close grained; it is used to make spears, &c. It would be useful to cabinet-makers.

Coca,—this is the Kohha of Captain Cook; close-grained and heavy timber; used as the principal supports of the roofs of houses; the bark is also used as a dye; it has very much the appearance of Brazil wood in colour, &c. The casuarina of these islands is a different species from that of the Society Islands; it is not so plentiful, neither are the trees so fine as those of the latter island.

Esculents.

Native Names.	Linnean Names.
Bawlo	Capsicum frutescens.
Papalanga	Pisum sativum.
Introduced	Brassica oleracea.
Ditto	Allium cepa.
Oofi	Dioscorea sativa.
Oofi	„ aculeata.
Goomala	Convolvulus Batatas.
Hina papalangi	Cucurbita citrullus.
Introduced	Cucumis sativus.
Talo	Caladium sagittifolium.
Mahoa	Tacca pinnatifida.
Introduced	Phaseolus nanus.

Fruits.

Nue	Cocos nucifera.
Me	Artocarpus incisa.
Foochi	Musa paradisiaca.
Moli	Citrus medica.
Moli	„ decumana.
Introduced	Bromelia ananas.
„	Anona muricata.
„	Cydonia vulgaris.
„	Eriobotrya Japonica.
„	Carica papaya.
„	Vitis vinifera.
„	Ficus carica.
„	Eugenia Malaccensis.
Foochi	Musa sapientum.
Ve	Spondias dulcis.
Ife	Inocarpus edulis.

Vavao.—Having heard from Mr. Henry, master of the Snapper, of Sidney, Port Jackson, and from the Rev. Mr. Turner, of Tongataboo, missionary, that two English merchant vessels had been attacked by the natives at Port Refuge, Isle of Vavao, I considered it to be my duty, notwithstanding that my going thither would delay me beyond the proper period of my departure for Lima, to proceed thither. The Seringapatam reached Vavao on the 4th, in the evening; on the 5th I sent an intimation of the purpose of my visit; and on the 6th I rowed up to Fellatoa, accompanied by Lieutenant Paulson, Rev. A. Watson, chaplain, and Mr. Matthews, and was directed to the great kava-house, where I found the king seated; Brown, an Englishman, on his left hand; on either side the principal chiefs, in front the lesser chiefs; around the house, on the green between the Tiatoka of the late king and the kava-house, were seated about three thousand

people : he desired me to be seated. Standing before him with my hat on, my officers also standing, I answered, " I am sent by King George to inquire of you, Finow, why you rose upon, and murdered, the captain of the Elizabeth and the Rambler whalers; can I sit until you have told me why you committed these dreadful acts ?" He trembled with fear : his countenance expressed dread of some punishment, and anger at the indignity he received in being questioned in the presence of his people. " Look at that priest I have brought—he is a token that I come not to punish, but to inquire." He stated, in a low tone, " That the master of the Rambler and he had traded very amicably, when two of his crew deserting, he threatened violence, and attempted to find them by force, instead of applying to him to recover them, and fired guns at the people on the beach. The men were restored on board, the captain had the folly to go on shore, when the people rose on him, killed him, and his boat's crew.. Of the Elizabeth, he said that the master and he also traded as friends, and the master agreed to give a rifle gun in exchange ; before he left, when ready to go, he demanded the gun, it was refused : I reflected ; I and my people will be fired upon, as by the Rambler ; I will begin first. I rose, killed the master, and some men ; I am very sorry that I have done so, and will not do so again." I replied, " I will tell King George what you have said, and that you are sorry." " Do you forgive ?" " I have no power to forgive ; I am sent to inquire." " Will you not drink kava ?" I uncovered my head, and sat down cross-legged ; the people showed their joy by a shout ; the kava was brought and received by me ; he then invited me to sleep on shore, which, after retiring to consult my officers, I consented to ; again the people shouted ; the kava was drank, and we retired to another private house, which was remarkable for its neat and cleanly appearance ; a double cocoa-nut mat covered the floor ; he desired me to send the officers away, as he wished to talk to me. We sat three hours, during which time he repeated, over and over again, the story of the murders, and his sorrow. After dinner, he would shoot, and missed all the birds sitting on the trees, but killed an unlucky fowl sitting, which was killed, plucked, baked, and eaten in half an hour ; another bowl of kava. He requested my cap, which was given. In the evening, we had a dance in the large kava-house ; after two more suppers, we went to sleep in his private house. After breakfast, the next morning, I proposed his going on board, to which he consented, but his minister desired a pledge from myself, before the people, that they should return on shore again, which I gave, and offered a hostage, adding, " My surgeon goes four miles in the island to see your favourite nephew, my chaplain goes with him, could I leave them in your hands, and intend to injure you ? King George

would hang me if I hurt you after a promise: enough, let us go." We embarked in two boats, accompanied by twenty-nine persons. As we passed the canoes, they cheered; on his mounting the deck, the marines delighted him, they performed the manual exercise; wine was served to him and his chiefs twice: he went all over the ship, examined everything, sat on the after combings, and tried to blow the boatswain's call. Hearing the drum beat for the officers' dinner, he followed the servants, and sat down to dinner. After he had dined, he quitted, and came to my cabin, when he sat down again to dinner. The marines were again exercised for half an hour; the natives, delighted,—shouted. At thirty minutes after three, P.M., he quitted the ship in the barge; at nine, the barge returned loaded with yams as a present from him.

Finow is an absolute king; his orders are most strictly and instantly obeyed: he is under thirty years of age, is a pagan, has three wives and two children: he can only marry the daughters of great chiefs. The eldest son born of the wife, daughter of the greatest chief, is the successor; his concubines were numerous.

The population was stated to be between five and six thousand, but this was a guess. The diseases are elephantiasis, hydrocele, and an eruptive, contagious disease called tarra: this disease is frequently fatal to the children; with adults, it lasts from four months to two years; the body is covered with a small scab; every one has it once, but never twice.

Of the islands we visited, Vavao far excelled all the others: its harbour is excellent, perfectly landlocked, of great extent, with numerous entrances, all to the west; the water good, and might abound, were more wells dug, for the island is hilly, and has a clay bottom; it is said to contain a fresh-water lake, but this was not seen by us. The yams are excellent, as are the bread-fruit and bananas; hogs and poultry were tabooed that they might abound at a great feast to be given at the Harpais boat races; two years since was a very dry, hot summer at Vavao: this summer produced a mortality amongst the pigs, the greater portion died, and the taboo then commenced until the island is replenished.

The island appeared to be covered with timber, no less than eight different species of timber were shown to me; but the joiner declined giving specimens. Mr. Matthews, the botanist, walked twelve miles in the island, and saw the trees, which grew unpruned, neglected, overrun with the wild yam, and a convolvulus, covering, as a curtain, the trees beneath: this causes the trees to be stumpy and full of boughs; he thinks that it would be difficult to find a plank twelve feet long, and a foot square. When land is to be cleared for planting, the wild yam and convolvulus are set on fire, which soon spreads to the trees, burning all the vegetation in this space between the bare trunks of the trees.

the vegetable yam is planted, the land is kept clear until exhausted, when the wild yam and convolvulus again resume their place, spreading over the leafless arms of the trees, giving them an appearance of vigour which they do not enjoy.

The basis of the island is coral rock, which rises many feet above the present level of the sea: the action of fire is visible on it, and we saw several instances of its crystallization. The figs and other trees start from the bare rock; the decay of their foliage soon produces a vegetable soil: it was delightful to behold the root descending from above to the earth, where, after firm hold, its tension is as great as if produced by art. On the top of the hills the soil appeared to be much deeper; and, by the vigour of the trees in open spaces, might be of ten feet depth. In the double ditch of the fortress of Fellatoa, of four feet depth, the soil was as good at the bottom as at the top.

Mr. Matthews seems to think that it would not be easy to get out the timber cut in the interior, from the want of means of conveyance, the obstruction of inferior trees, and the steep ascent and descent of the hills; but the chief difficulty is the government.

The soil and everything in the island are the king's. Should an industrious man cultivate tobacco, or clear ground, or prune trees, the king sees or hears of it, and sends for it: the king, or chief under him, assumes all the vegetables, poultry, or hogs, as his own, and, in barter, puts the price on each, which either is paid to him or to the grower; if a present is made to the king or chief, it is instantly distributed amongst the followers, except that part which the chief allots to himself.

I stated to Finow, that the missionaries are not sent by the King of England, but by good men in England, and that he might receive or send them away; but if he received them, he must treat them with kindness, protect them from harm, else he would displease King George, who would not permit his children to be murdered or ill-treated.

They were clean in their persons: the foreskin of the prepuce is slit at puberty. Both sexes are naked from the waist upwards, oiling all the parts exposed with cocoa-nut oil, perfumed with sandal wood; from the waist down, they wear drapery of tapa, and a girdle of many folds round the waist. The king puts on a new dress every day. This dress showed the beautiful forms of the young women. Finow was always on shore attended by four young female servants, one on each side to fan him, and two for messages. The male figure is strong, muscular, and athletic; differing from the European in the short humerus, and short thighs, giving, in our opinion, an undue length to the fore-arm and leg;—in the leg, however, the disproportion is not so visible, as it is always concealed, except in dancing, when they wear nothing but

a short apron in front, leaving the whole back figure exposed. When standing by the sailors, the natives looked large; their well-turned muscles, erect carriage, and graceful walk, gave a very striking appearance; but they cannot work two hours together, and a two hours' walk fatigues and exhausts them; they lie down to sleep, and are always eating, lolling, or talking; yet their dances are very fatiguing, as they both sing, as music to the dance, and dance.

The single women, and sometimes the married women, sleep in parties, in a large hut; at night the young men visit them; they embrace, and the girl is permitted to receive the embraces of any man until she is married, when she can receive no one but her husband; if unfaithful, she is beaten; a club-fight follows between the husband and adulterer.

This license is not permitted to foreigners; no women can be obtained except by order of the chiefs, as the woman becomes polluted by the connexion, and is only excused if obeying an order of the chief; no bribe, no offer will avail.

The men are tattooed from the hips to the knees, in front and behind; the women ridicule a man not thus tattooed; as it is a very expensive and painful process, continuing a fortnight, nothing but the ridicule of the women would induce them to bear it; the women are tattooed in the legs and feet in a very pretty manner with small stars as a spotted stocking.

WARS, WAR-CANOES, &c.—No war existed at any of the islands we visited. At Noahevah there was every disposition for war, but they were at peace. In the Society Islands, the disposition of the chiefs and inhabitants appeared to be so peaceable, that we could not see a probability of war; we did not see any war-canoes there either, nor did we hear of any, or of any quantity of arms.

In the Friendly Islands we saw several war-canoes in good preservation; spears, clubs, were in every house, and some fire-arms. At Fellatoa, in the grand kava house, over head, we saw a store of spears and other warlike instruments. At the first interview with Finow, each man had a war-club concealed under his waist-cloth ready for service at the orders of Finow.

A double war-canoe at Fellatoa, to carry two hundred men, measured ninety feet long, eighteen broad, and four deep, with a stage of two stories in its centre; it consisted of two long canoes placed parallel, joined by frame-work in the centre; they were both decked, and only open in the hold, amidships; six rowers, with upright paddles placed abaft the stage, of twelve or fourteen feet, propelled it; when rowing, the force required was such that few men could row a paddle three minutes; when sailing, a mast stepped amidships. I did not see any war-canoe afloat; but they were at peace.

DISEASES.

(Furnished by Mr. Guthrie, Surgeon of H.M.S. Seringapatam.)

Noahevah, Marquesas.—With the exception of two cases of phthisis, and a few slight cases of elephantiasis, ulcers were the only disease I observed among these people; they were extensive and very prevalent, more so among the males than the females, occupying chiefly the extremities; not occurring among the children; and though the cicatrices were observable among the old, few that I saw had open ulcers. No attention being paid by the natives to the most extensive of their sores, they were covered with an eschar, so that their true character could not be ascertained; but I am inclined to think them of a syphilitic character, occurring in scrofulous habits; and independent of seeing some who had lost the bones of their noses, we had ample proofs of their having the former disease.

Food at this time is evidently plentiful, but this state of abundance certainly does not continue throughout the year, as they have large quantities of an acid substance, made from the bread-fruit, cocoa-nut, and banana, prepared and kept in troughs, for the season of scarcity. Whether this could operate as a cause I am unable to say; but I have no doubt of the bad effects of the damp—their beds, consisting of a thin mat, being placed on the moist and often wet earth: other powerful causes no doubt exist, but which I have no means of ascertaining.

Society Islands.—At Otaheite and the other Society Islands, elephantiasis prevails to a great extent, and is not, as is generally supposed, confined to the natives,—most of the missionaries and many other Europeans are now labouring under it; it attacks the scrotum as well as the legs and arms. The scrotum of a Spaniard I saw at Otaheite weighed about one hundred and eighty pounds; and that of a native at Raiatea weighed about one hundred pounds.

Mr. Williams, the missionary at Raiatea, who, by books and observation, has attained a considerable knowledge of disease, informed me, that having yielded to the earnest solicitations of a few chiefs of that island to cup them (all the natives being fond of topical bleeding in all diseases), he made several incisions with a lancet in the lower part of the leg affected, and took away some blood, with cupping-glasses, with complete success. This report induced me to comply with the wishes of Mr. Blossom, missionary-artizan, then at Raiatea, who had laboured under the disease in one of his legs for nearly seven years; I applied the scarification a little above the outer ancle, and with the cupping-glasses took away twenty-five ounces of blood. Two days after, the leg was reduced several inches, though he did not confine

himself; and I have no doubt but that a repetition of this remedy would remove the disease.

Large abscesses forming in various parts of the body is another affection common at these islands, but more at Otaheite than elsewhere. The loins and between the shoulders are the parts most frequently attacked; it begins with severe pains in the part, attended with little inflammation, generally attacking the young and athletic, reducing them to the lowest state of debility; and often ending in death, unless an early exit is given to the matter. Hydrocele is a prevalent disease. Deformity of the dorsal vertebra and the other bones of the chest is very common at all these islands; it is said to succeed to an affection of the thoracic and abdominal viscera, and that when this deformity does not take place, death is the consequence. Remittent and intermittent fevers prevail at certain seasons of the year, particularly at Huaheine, owing no doubt to the marshy nature of the grounds surrounding the settlement. Visceral inflammation is common, as are also most of the diseases common in inter-tropical climates.

Tonga, or Friendly Islands.—At these islands an eruptive pustular disease prevails; it resembles in appearance the small-pox, but leaves only a slight redness of the part, which soon wears off. It is said to be contagious, attacking the young, and beginning on the feet, gradually spreading over the body. It is called by the natives "tarra" or "tona." Strangers residing for a considerable time are generally attacked with it, and suffer more than the natives. At Vavao, hydrocele prevails to great extent; puncture of the scrotum is the palliative, and excision of the testicle is the radical cure for it. After the latter operation, the patient is kept in a state of perfect quiet for a long period. Scrofula, affecting principally the cervical and mesenteric glands, is a disease prevailing to a great extent both at Vavao and Tongataboo; and, of course, they suffer more or less from diseases common in these climates.

ANALYSES, &c.

I.—*Narrative of Voyages to explore the Shores of Africa, Arabia, and Madagascar.* Performed in His Majesty's Ships Leven and Barracouta; under the direction of Captain W. F. W. Owen, R.N. By Lieutenant Wolf, R.N.

In the autumn of 1821 an expedition was fitted out at Woolwich, to explore the eastern coast of Africa, the island of Madagascar, and the shores of Arabia. It consisted of the Leven, ship-sloop, of 26 guns, commanded by Captain W. F. W. Owen; and the Barracouta, 10-gun brig, Commander William Cutfield. Whilst fitting, experiments were made on the flight of rockets, as a method of ascertaining the difference of longitude between two places. A 32-pound rocket ascended 6000 feet; 24-pound, 4500; half-pound, 2400. The 32-pound rocket was seen a distance of fifty-five geographical miles.

A botanist (Mr. John Forbes), paid and provided by the Horticultural Society, was embarked; and having completed all their equipments, the expedition left England on the 13th of February, 1822, and arrived off Lisbon on the 23d. The object of this visit was to obtain directions from the government to the Portuguese African colonies, to afford the expedition every assistance; which was most freely done. Hence they proceeded to Madeira; and, on leaving that island, made a correction in the longitude of its western point to 17° 13′ 9″ W. Having touched at Santa Cruz for refreshments, they arrived in Mordeira Bay, Island of Sal, and arranged a rocket experiment for measuring the meridian distance between Sal, St. Vincent, and St. Nicholas; the rockets were fired from Monte Gardo, on the last-named island. This failed from the dense haze, which, hanging over the low land, prevented the rockets from being seen by the parties on Sal and St. Vincent; though to those elevated on the summit of Monte Gardo the night appeared favourable.

Mr. Forbes says, 'Monte Gardo is composed entirely of volcanic soil, so fragile and porous, that when taken up in lumps they fall to pieces with their own weight, like cinders loosely caked together. It is well clothed with vegetation even to the summit; the euphorbia balsamifera growing to the height of

3700 feet above the sea, but no higher; the bupthalmum sericeum, and some others, quite to the top. The height was ascertained by barometer to be 4380 feet; the thermometer being 45° at night.

The Leven had meanwhile proceeded to Porto Grande, where all the parties having again rendezvoused, and not being able to get a supply of water there, they sailed for Tanafal Bay, St. Antonio, which is described as the most convenient bay in the whole group. "From the high mountains over the bay a small stream descends, which is never dry. On the first level spot a large pond has been formed as a reservoir, with a sluice to conduct it to the beach below." Captain Owen remarks on the precipitous nature of its shores, falling suddenly from thirty-five fathoms to no bottom with sixty fathoms of line; and indulging in the comparison between an island and an iceberg, supposes that the base of this "immense mountain" may be three or four miles deep—the data being the mean height of the island, taken at 1500 feet above the surface. The orchilla moss is the principal or only article of trade. The ships touched for a day at Porto Praya; and on the 25th April made the Martin Vas Rocks: the following day, coasted the shores of Trinidada, which appeared to them a mass of rocks. As regards its longitude, Captain Owen differs forty-five miles from the position assigned it by Pérouse; but corroborates the assertion of that navigator as to the non-existence of Ascensaõ. Having vainly endeavoured to find this island, the expedition made sail for Rio Janeiro, where they anchored on the 1st May. Here they purchased a small vessel of one hundred and sixty tons, which was called the Cockburn, to serve as a tender. The vessels refitted, the boats were employed in the survey of the harbour, and various astronomical observations were made.

On the 9th June, they left Rio Janeiro, and arrived in Simon's Bay on the 8th July. The Cockburn suffered much in her passage from Rio, and as it was found that her repairs would occupy much time, Captain Owen ordered the Barracouta to proceed, coastwise, to Algoa Bay, determining the position of different points in the way. Kaffre interpreters were also embarked; and she was directed to join the Leven in Algoa or Delagoa Bay.

The delay at the Cape was improved by surveying the whole peninsula of the Cape and the shores of False Hout and Table Bays. And during the same period, the Heron was sent by Captan Owen to search for some of the numerous dangers said to lie off the Cape, the result of which cruize may be considered decisive against the existence of the Telemaque and other shoals. "The Cape peninsula may be said to be composed of two mountainous tracts, separated by a narrow isthmus of low sandy plains.

The northern tract is composed of the famed Table Mountain, that of Constantia, and several others of less note, and contains many valuable estates; while, on the southern range, from Hout and Fishhook Bays, there is not one estate valuable for its productions, although the land is equally capable of improvement in every point of view."

There are three whale-fisheries established in Fish-hook, Kalk, and Gordon Bays; but they have proved destructive to the species. The great bank of Lagullas is equal to that of Newfoundland, and would probably be as productive a fishing establishment as any in the world,—salt being extremely abundant, and many desirable situations existing along the coast for fishing towns.

The Barracouta was thirteen days tracing the coast as far as Port Elizabeth, in the Bay of Algoa; which name is applied to all the country between Capes Reciffe and Padron. The former is a low point of land, composed of rocks and sand-hills; the latter once had a pillar standing on it, which was erected by Bartholomew Diaz in 1486.

About three miles north of Cape Reciffe is the new town of Port Elizabeth. The Dutch colony extended no farther than the Camtoos river (forty or fifty miles westward); and although there are some scattered farms beyond that river, all the regular settlements eastward of that point have been undertaken by Great Britain.

Port Elizabeth, so called after the lady of General Donkin, is the best sheltered spot on the coast for six hundred miles from the Cape. The principal establishment is a depôt for commissariat stores. There is a whale-fishery about two miles from the town.

Near Cape Padron are some small rocky islands, called Chaos, meaning "flat;" and sometimes also, Bird Islands, from the numerous birds found on them. They are famous for two events—the termination of the voyage of Bartholomew Diaz, and the loss of the Doddington, East Indiaman.

Having remained in Algoa Bay a week, the Barracouta proceeded to trace the coast eastward, and ultimately rejoined the Leven, in English River, Delagoa Bay, on the 17th October.

"All the country east and northward of the Camtoos River was formerly inhabited by a race of negroes very distinct from the Hottentots, and who appear to have peopled it from the northward, generally by the interior, whence they have spread towards the west. "These negroes were formerly termed by the Arabs and Portuguese 'Kaffers,' meaning literally infidels. When the Dutch first colonized the Cape, all the country beyond their settlements was, in conformity with the language of the first discoverers, called the country of the Kaffers, since Latinized into Caffraria."

From the Keiskamana, along the coast to Delagoa Bay, the country is still in possession of several tribes of these negroes (Kaffers), who have been little visited by Europeans. Some Wesleyan missionaries have attempted to penetrate, but failed from the prejudices and cruelty of the natives. The sea boundary of this country is varied and interesting, presenting a diversity of hill and meadow. Caffraria is divided from the interior by a range of mountains, some nearly six thousand feet high; but the coast is deficient in harbours: some of the rivers, however, might be made to answer the purpose by clearing the bars.

The Kaffers have no fixed towns or villages, their kraals, as they are called, being scattered all over the country. They are described as being at the very lowest in the scale of humanity.

Delagoa Bay is a large bight, extending about twenty miles in an east and west direction, from Cape Inyack to the entrance of English River, and twenty-two miles to the southward of this line. Three considerable rivers fall into it,—the Mapoota, English River, and Manice or King George's River. The Portuguese factory is situated on the northern shore of English River, about three miles from Point Reuben, a bluff cape, two hundred feet high, forming the northern entrance of the river. It has a small redoubt, with a few honeycombed pieces of small ordnance mounted on its mouldering parapets. The garrison consists of eight officers and fifty soldiers, some of whom are negroes. English River may be considered an estuary of the sea, into which, at the distance of eight miles from the entrance, other three rivers, the Temby, Dundas, and Mattoll, discharge themselves, none of whose sources were believed to be above thirty or forty miles distant; and only one, the Dundas, has fresh water in the dry season. The shores of English River are an extensive mud-flat, covered with mangrove trees far below high-water mark. The water is quite salt, and discoloured by mud, though the depth is sufficient for ships of the largest size. Of its tributaries, the boats first explored the Mattoll: eight miles up, the mangroves were succeeded by forest trees, and the swamps by meadows. At this spot they were near its source, which is an extensive marsh; the breadth was decreased from nine hundred and sixty feet at its mouth, to less than eighty; and the depth from sixteen to eight feet. They next explored the Temby, skirted on both sides by putrid swamps and mangroves; but, like the Mattoll, as they advanced these gave place to fairer scenes. They ascended this river forty-six miles (including sinuosities), where a barrier of trees, fallen from the lofty banks, rendered farther advance impossible. In descending the stream, the boats were attacked by a party of Hollontontes, but beat them off, having one man wounded by an assagaye. Subsequently, the Dundas River was

explored nine miles up, when they came to a ford, beyond which the river still continues a few miles. The shores resemble those of the other rivers, and they all abound in hippopotami.

A free traffic was entered into with the natives in poultry, vegetables, eggs, spears, hippopotamus tusks, &c., for knives, trinkets, and buttons. The custom of tattooing is universal, each tribe however having its distinctive mark. They shave their heads, leaving patches of wool in ridiculous shapes: and some of the tribes have the custom of filing the teeth. They also indulge in smoking to such an excess as to produce violent coughing, profuse perspirations, and great temporary debility. Their arms are assagayes and spears, the only difference between which is that the former are light and thrown like javelins, and the latter are stronger for thrusting. They are also provided with oblong shields of bullock's hide. They manufacture spirits of two different sorts, one from maize and millet, the other from a fruit resembling the guava; the former is the most potent.

The mapoota is much cultivated in all eastern Africa—the oil being considered equal to that of olives. The plant is as tall and rank as hemp; is extremely productive, having numerous pods throughout the stem, and is found in a wild as well as a cultivated state. Sweet potatoes, pumpkins, onions, maize, and millet are cultivated. The following birds were seen in Delagoa Bay:—pelican, white crane, adjutant, kingfisher, toucan, spoonbill, flamingo, curlews, turkey-buzzards, hawk, duck, goose, guinea-fowl, pigeon, dove, loxia, and many small birds of beautiful plumage.

The river Manice, or King George's River, was also explored nearly fifty miles; its direction is north, running nearly parallel to the sea-shore; its water is fresh close to the mouth; and the current runs in many parts two and a half miles an hour. After passing the islands at the entrance, which were swampy and covered with mangroves, and sand-hills thrown up by the sea, they came upon a more cultivated territory, thickly peopled, with a rich soil, and the natives living in abundance and comfort. Rice appeared the principal production, and that so abundant as to enable them to carry on a lucrative trade with the people of Temby. Captain Cutfield obtained an interview with a party of Hollontontes, who were on a predatory expedition against the natives: as our party approached, men with long white rods cleared the way, by striking the shins of those within their reach. The men are jet black negroes; the women, of a lighter shade. The costume of the chiefs was warlike, graceful, and dignified; that of the women, modest and becoming. They wore kilts, formed from stripes of hide; with ornaments on their arms, round their waists, and ancles, large brass rings in their ears, and caps on their heads made of hair and feathers.

During the stay of the ships at Delagoa Bay, they suffered severely from the fever, which made its appearance on the 24th October, between which date and the 29th November, the day they left the place, no less than fifteen fell victims, among whom were five officers; and this frightful mortality hastened their departure from the Bay. The unhealthy season is from April to September.

The territory around Delagoa Bay is thus divided:—to the southward, Mapoota, or oil country; to the south-west, Temby; to the north-west, Mattoll; and to the north, Mabota. "To the southward of Mapoota, there exists a tribe of warlike Kaffers, called Zoolos; but the people of Delagoa call them Hollontontes, doubtless a corruption from Hottentots, as coming from the south, which is considered their country. This tribe some years since subjugated Mapoota, and are the terror of the country."

From Cape Inyack (or Cape St. Mary), the ships began to trace the land to the southward. "The coast is a continued tract of sand-hills, from fifty to five or six hundred feet high, with a few black rocks, whose appearance is rather anomalous, for from Cape Bajone, near Mozambique, to the river St. Lucia, there can hardly be found a stone anywhere near the sea, except the coral reefs of the Angosta and Bazaruta Islands, a small rock off Cape Corrientes, and this spot near Lagoa River and Cape Reuben. The interior of the whole distance from Cape Inyack seemed a low, level country, with knots of trees, like park land. All the rivers are blocked up in the dry season.

"A ridge of mountains takes its rise in about 29° S. (Point Duniford), and striking directly to the westward, increases in height and magnitude as it advances into the interior. It there appears to run parallel with the coast to the southward, even to the confines of our colony. The mountains are from three to six thousand feet high, and separate that most beautiful and fertile tract usually known by the name of Natal from the surrounding countries."

Captain Owen, in standing for Madagascar, passed over the spot assigned to the island called Juan de Lisboa, which he seems to think the same with Bassas da India.

On the 22d December, the ships anchored of Isle Madame St. Mary, which is thirty-one miles long, N.E. b. N., and from two to three miles in breadth. Its surface presents a succession of hills, from two hundred to four hundred feet high, with deep and, in general, narrow vales, thickly covered with brush and underwood. Twice the French formed a settlement on this island; the first time, the climate obliged them to abandon it; the second time, they were all massacred by the natives. In

1821, they again took possession, but suffered severely from the climate. Isle Madame, a low coral islet, constitutes their citadel, to which they retire every night for safety. The harbour is small, but deep, sheltered from all winds, and has a good supply of fresh water. The natives are short, rather darker than mulattoes, with low foreheads, broad and flat countenances, large eyes, and capacious mouths. They all had long hair, but crisped, worn by the men in knots, without regularity, but by the women neatly divided into seven, nine, or eleven squares. The men generally had no clothing but a piece of native cloth about the loins, and hats of basket-work, in a semi-globular form ; but the women exhibited some taste in their costume, wearing blue spencers with long sleeves, fitted tight to the body, and ending just below the bosom, where the skin was visible between it and two pieces of cloth, the one serving as a petticoat, the other as a gown. A few had ear-rings, but no other ornaments ; and both sexes appeared particularly careful of their teeth, which they clean with snuff. The women are cleanly, and anoint themselves with cocoa-nut oil. Their canoes are small, of the common form, and delicately made, yet they venture far from the land, and will attack whales, which they kill by means of drags to the harpoon line.

The fan-palm is very plentiful, and invaluable to the inhabitants ; houses are entirely constructed of it, the stems serving as supporters, the leaves forming the sides and roof. There are several looms for weaving cloth, made of the fibres of the sago-palm leaf, which is extremely durable ; the natives also traffic in shells, wax, and turmeric. Beasts and birds are neither numerous nor varied ; but there is an abundance of fish and vegetables, which are the principal subsistence of the inhabitants. The soil is exceedingly fertile, and would have produced all the fruits of a tropical climate. Chastity is no virtue at Madagascar, and is unknown after nine or ten years of age. The black population of St. Mary's is from twelve to thirteen hundred, a portion of whom are slaves to the rest. They pay no duties to the French, and are governed by their own laws.

On the 8th January, the ships left St. Mary's, and arrived at Johanna on the 22d. The object of touching here was to procure supplies, which they did in great abundance. A heavy surf renders landing dangerous, the natives using canoes with outriggers on each side. The inhabitants are rather below the usual size, delicate, yet well-formed, their expression pleasing, and their complexion lighter than the mulatto. The men are clothed in the Turkish costume, and Arabic is the language spoken.

From this, after surveying from the Querimba Islands to the southward, the ships anchored at Mozambique. This harbour is five and a half miles broad, and six long, with three considerable

rivers at its head. The anchorage is rendered secure by three islands, on the centre one of which stands the town. They are of coral, and very low. Vasco de Gama touched here on his voyage to the East Indies; and not long after it was taken possession of by the Portuguese, who, in 1508, built Fort San Sebastian, which is quadrangular, very extensive, and containing within its walls a chapel, barracks, prison, tanks, and storehouses, with sufficient space for manœuvring a large body of men. The harbour is farther defended by four other small forts. The garrison consisted of about two hundred black soldiers. The place is fast sinking into insignificance, and is now reduced from its ancient vice-regal splendour to poverty and desolation: it is still a bishop's see. In 1769, the Arabs were expelled this place, as well as Sofala and the settlements on the river Zambezi. The population at this time amounted to about six thousand—Portuguese, Canareens, Banyans, free coloured people, and slaves; the former the most limited, the latter the most numerous. It is a mart for slaves, and a small quantity of ivory and gold dust. The northern shore of the main is the only part cultivated for the maintenance of its population, the Arabs supplying the rest. The Portuguese jurisdiction does not extend ten miles in any direction; the natives will trade with them. but will not suffer them to enter the country. The governor is elected every three years, and his salary is so small, that he is compelled to enter into mercantile speculation, in which his authority supplants the regular trader. Mozambique is at times very unhealthy; bark is the only remedy employed by the natives—bleeding is never resorted to. There are no beasts of burden, all the work is carried on by slaves.

Leaving Mozambique, the shoals of Magnirah and St. Antonio were examined; the current was found to set strong to the southward, near the edge of the coral banks; and the Leven anchored off Angosta River, which might be made practicable for large vessels. The country is extremely fertile. The Angosta Islands are all of coral, more or less wooded, and abounding in fish and turtle, as well as the most beautiful shells and corallines.

The Barracouta having left the Leven at Mozambique, proceeded to the southward, surveying alongshore, which is thus described:—"From Mozambique to Bazaruta Islands, the coast is bounded by a bank, from twelve to fifteen feet in length, covered with bushes; through which, in various parts, the sandy formation is visible. Trees are scarce, and grow principally on the water's edge. The rivers are innumerable, but few are of any importance; the boundary of the river-water was perfectly defined by its light green colour contrasting with the deep blue of the surrounding ocean. So great is the rush of the floods from the various mouths of the river Zambezi, that four miles from the land

the water is perfectly fresh. The interior is an extensive morass, of considerable depth, quite impassable, being covered with grass six feet above the water, and emitting a very disagreeable and noxious vapour.

The bank off Cape Bazaruta is the site of the famous pearl-fishery of Sofala, and hence these jewels are supposed to have been carried up the Red Sea together with the gold of Ophir.

Continuing the survey, the Leven anchored in English River on the 1st March, where they found the Cockburn tender had completed the survey of Delagoa Bay, and explored the river Mapoota, nearly sixty miles from its mouth, with the same features as the other rivers before described; in which her crew had suffered so much from fever, that only two were left on board.

On the 16th March, all the vessels left Delagoa Bay, intending to conclude the survey of the coast as far as our colony towards the Cape of Good Hope. To the river St. Lucia, the shores present few pleasing features, but thence it becomes more diversified; the names of the countries were understood, from the Kaffers on board the Leven, to be as follows:—from the Keis kamma River to the Buffalo, Gaika; thence to the Ganooby, Kasloongo; thence to the Kye, Intah; and from the Kye, north-eastward, Magatēga, Batōmbo, Madtellah, and Maheimbo, which is supposed to be about Port Natal.

Passing close to the bar of Kowie River, they observed no indication of a port, as represented by the colonists; and on arriving in Algoa Bay, not being able to procure supplies, and finding it necessary to recruit their numbers, (so much thinned by fever,) they steered for Simon's Bay. Whilst here, an expedition was planned for exploring Zambezi River. A Wesleyan missionary, Mr. Threlfall, embarked in the hopes of being able to penetrate into the country about Delagoa Bay; and three vessels were fitted out by the merchants, to endeavour to open a trade with the negroes in the same direction.

On the 24th July the Leven returned to Delagoa Bay, where, having landed Mr. Threlfall, she remained till the 6th of September, and had much intercourse with the natives. Leaving Delagoa Bay, she anchored, on the 12th, off the Bazaruta islands, and communicated with a new tribe of natives, wearing an apron of goat skin and armed with bows and arrows; they had abundance of cattle, sheep, poultry, and pearls, and wanted cloth in exchange. The pearls on this coast have not been fished for several generations, and they never go more than knee deep for the oysters; fish of all kinds are plentiful. Their sheep are of the Tartar breed, and some good ambergris was purchased. The women wore belts of large beads cut out of the columns of conch shells, and had the upper lip perforated, in which they wore a

piece of ivory or shell, in the shape of a horn, very smooth and about three inches in length.

From this place the Leven went to Sofala, where she found the Barracouta, who had landed the Zambezi party at Quilimane. The riches of this place formerly consisted principally of grain, with gold and silver, but the introduction of the slave-trade has changed this seat of peace and agriculture to one of war and bloodshed, and Quilimane now does not supply itself with corn for its own consumption. The town is built on an unhealthy marsh; it contains thirty-two houses, inhabited by the Portuguese and Creoles, with innumerable huts for the slaves, amounting in all to a population of about two thousand eight hundred men. The houses are large and substantially built of brick, one story high, with verandas all round; the huts are small, built of reeds, and thatched with coarse grass; the door is the only aperture. Fruit and vegetables are various and plentiful; cattle are small; a few horses have been imported from Brazil. Lions, tigers, elephants, buffaloes, and deer, are common; ostriches are unknown, but alligators abound in the river. Quilimane is the greatest mart for slaves on the coast; they are purchased with dungaree, cloths, arms, gunpowder, brass and pewter, coloured beads, cutlery, &c. &c. Polygamy is universal, as is the practice of tattooing, each tribe having its distinguishing mark—large gashes are cut, and the flesh made to protrude from the wound by constant pinching.

The men are of the middle size, ill-formed, with broad hips, flat noses, woolly hair, and thick lips; the hair is shaved in a variety of ways; a small piece of coarse cloth, just sufficient to cover their nakedness, constitutes the clothing of all, except the chiefs, who wear a sort of mantle thrown over the shoulders. They use few ornaments except bangles of brass and iron. They have also the custom of perforating the lip, the aperture being kept distended by rings of brass, leaving the teeth exposed. The climate is unhealthy; the favourite medicines are bark, rhubarb, columbo root, and Anarello pill—but never mercury or bleeding.

From Quilimane the Barracouta went to Inhamban, a place not nearly so rich as the former, the river not offering the same facilities for procuring slaves. The trade here is principally in ivory and bees-wax. The river Inhamban, although easy of access, and affording a deepish harbour, is scarcely navigable for a ship beyond the town, eight miles from the entrance, and five miles farther is not even accessible to boats. The Portuguese population, exclusive of the military, was only twenty-five, but the coloured inhabitants are very numerous. The natives will not allow the Portuguese to advance into the interior of the country, although they are ready to traffic with them; the arms they use

are spears, assagayes, and bows and arrows, the latter being dipped in an active vegetable poison. Inhamban is considered the most healthy of the Portuguese settlements on the coast, but the buildings are by no means equal to those of Quilimane. Sofala, the Ophir of Solomon (supposed), now only boasts of a paltry fort and a few miserable mud-huts, the Portuguese having no influence beyond their guns.

Having completed the survey of the bay, the ships sailed for Mozambique, where, having completed water, the Leven sailed for Bombay; the Barracouta and Albatross to survey the coast from Patta to Mozambique.

From Bombay the Leven proceeded to Muskat, to procure from the Imaum passports for his dominions on the shores of Arabia and Africa. The town of Muskat is situated on the beach, at the foot of a high hill, which completely encircles it, leaving but one pass; in this gap are numerous mat hovels of the native Arabs, who are not allowed to build anything more substantial, for fear they should cover the advance of an enemy. Every height is surmounted by a fortification, apparently capable of resisting an assault, but the place itself may be cut off from the interior and easily blockaded from without. The town is one entire bazaar, the streets are very narrow, partially covered with palm-leaf mats. The houses are generally only one story high, having a flat roof covered with earth. The harbour is perfectly sheltered from all winds but the north, which sometimes brings in a heavy sea. Hindostanee appears to be the *lingua franca*, Arabic is only spoken by the native Arabs. Fine grapes were procured here, with water-melons, pomegranates, oranges, limes, dates, and raisins; lucerne is cultivated as food for horses. Muskat is dependent on commerce for its daily bread, and the sultan uses his frigates as merchant vessels. Pearls may be procured from the fishery of Bahrein, in the gulf, which has, however, been neglected for so many years that it offers an opening for lucrative speculation.

Having procured a pilot and an interpreter, the Leven left Muskat on the 1st of January. The land to the eastward is composed of rugged mountains with little verdure, but the country on the other side is said to be fertile and productive. Captain Owen intended to trace the coast minutely from Muskat to Dafoor, but found that the wind constantly failed him in-shore; he, therefore, commenced at Ras al Had, which is a low sandy point, with a Sheik's tomb at the extremity; the mountains at the back, called Jeebel Huthera, rise to the height of almost six thousand feet. Passing Ras Jino, the coast thence to Ras al Hubba is formed of steep rocky cliffs from thirty to forty feet high; after which it becomes sandy and shallow, with good anchorage and plenty of

fresh water, and continues low as far as the island of Massera, the external appearance of which is very forbidding; yet this is the only place where the date trees bear twice a year. The Leven surveyed the whole outer coast of this island to Aboo Rassas, and then continued her course along the main, passing in succession the shoal cliffs, Cape Isolette, Ras Kooriat, and Ras Markass, on the north side of which is a safe little harbour. The great bay of Saūgra is formed by Cape Isolette and Marica; there was not the least appearance of vegetation or animation on its shores, except a few men and huts at Madraka, where the dominion of the Imaum of Muskat terminates, and that of the Sultan of Dhofar commences. The next place to Saūgra is Koorya Moorya Bay, which is extensive and has good soundings throughout; the islands are named Jibly Halnanny, Soda, and Haskee. Soda is the only one inhabited; the anchorage and village are at the north end, where it is said water may be procured. Its mountains are very high, and apparently of volcanic production. The only rivers met with between Muskat and this (a distance of about one hundred and forty leagues) are one at Saūgra and one at Minjy; the cliffs increased gradually as they continued their course, from five hundred to nearly one thousand five hundred feet in height, and the hills of Noss Labout Morbat cannot be less than five thousand feet. Discontinuing the survey of the coast at Cape Morbat, the Leven steered for Soktra, and surveyed its northern shore, passing the bays of Tamarin and Palanseca, and between Soktra and the Sabayna rocks. The inhabitants of Soktra are supposed to be Abyssinians, as they neither speak nor write Arabic. From this they steered to the Island of Abdul Koory, which is about twenty miles long and two broad, composed principally of granite, and resembling Soktra in formation; and anchored in a fine bay at the western point of the mountain on the south shore.

Leaving Abdul Koory they steered for the bold headland of Gardafui, and rounding the peninsula of Hafoon, which appears like an island, ran to the westward about eighty miles, as far as Ras ul Khyle, the whole shore rocky, varying from two to four hundred feet in height.

The coast of Africa, from the Red Sea to the river Juba, is inhabited by a tribe called Somauli, a mild people of pastoral habits, followers of Mahomet, and confined to the coast; the interior is occupied by the Galla, an uncultivated and ferocious set of savages.

Mukdeesha is the only town of any importance on the coast; the harbour is formed by a long reef; the town is divided into two, called Umarween and Chamgany, the latter being composed entirely of tombs; the former has nearly one hundred and fifty stone

houses, built in the Spanish style. The imports are sugar, dates, salt fish, arms, and slaves; the exports, ivory, gum, and a particular cloth.

To the southward of Juba, to the island of Chuluwan, and perhaps to Delagoa, the coast is inhabited by a race of Mahometan Moors, differing in language, person and character from the Arabs and native Africans; this people are now called Sowhylese. The river Juba is described as rising in Abyssinia, and may be navigated in boats for three months from its mouth; the passage across the bar is narrow, but has plenty of water. The coast and most of the islands to the southward of the river are of madrepore.

The Leven afterwards anchored off the town of Lamoo, which is built in the pure Arabic style, the houses being crammed together as close as space will allow. It has much commerce, and its population is about five thousand souls. In the centre is a large fortress, about a hundred yards square, and surrounded by walls from forty to fifty feet high. The Arab dows on this coast are sharp at both ends, without any timbers, the planks being neatly laced together with coir, and carrying one large sail made of matting. Having received supplies, the Leven sailed for Mombas, where she arrived on the 7th of February, and landed Lieutenant Reitz as commandant, the chiefs wishing to place the whole country under British protection. She then anchored at Pemba, which Captain Owen describes as one of the most fertile islands in the world, abounding in excellent ship timber and luxuriant vegetation; supplies were also abundant. Touching at Zanzibar, Lindy, and Makindany, they arrived off Mizimbaty, a bay formed by the isles of Manakoohanga, but apparently blocked up by reefs. Near the south point of Mizimbaty the rush of water from the great river Rovooma (which, it was imagined, was next in size to the Zambezi) produced an appearance of fresh water. At Tho, they learnt that the Barracouta had only left five days previous, which ship they joined off Mozambique.

It will be remembered that, on the Leven's sailing for Bombay, the Barracouta and Albatross were left to survey the coast from Patta to Mozambique. The island on which Patta stands is bounded by hills, and divided from the main by a narrow sandy creek, navigable only for boats; it appears formerly to have been a place of much greater importance than it now is. When the Portuguese became masters of the coast, they built a castle at Patta as one of their strongholds, but were driven out by the natives, who having been at times independent, at others under the Sheik of Mombas, and again under the Imaum of Muskat, now remain subjects of the latter. The town is small and scattered, the huts are in the Arab style, of an oblong form, standing east and west, composed of reeds and stakes well plastered with mud,

the roof not resting on the wall, but supported by rafters a few feet above the eaves, and projecting far beyond the building. The doors resemble those before described at Lamoo, which place the Barracouta next visited. The costume of the inhabitants consists of a carpet skull-cap with a white embroidered turban, a long white garment reaching to the ancles, fastened round the middle by a piece of cloth, hide sandals, a sabre over the shoulder, and a dagger by their side. The food of the lower class of Arabs consists chiefly of rice, ahol, cocoa-nuts, and a large fish of the bonito species, dried and salted; sherbet and toddy form the beverage of the higher as well as the lower class. Their commerce is principally a coasting trade, for the supply of articles of daily consumption.

Leaving Lamoo, the Barracouta proceeded to the southward, and anchored off the river Ozy, which they learnt was a mile across at the entrance, and deep inside, but dangerous of access on account of a bar of quicksand. Just within this bar, on the south side, stands the small town of Sanda, and twelve miles higher up that of Kow; during the rainy season the river rises and inundates the country for many miles. Above Kow, every twelve or fifteen miles, there are large villages, and at the distance of fifteen days poling and paddling is the town of Zoobakey, beyond which the current is too strong for further progress. They next anchored in Maleenda Road. The town has been entirely destroyed, and the territory is at present occupied by the Galla. Having surveyed the Leopard Bank, Captain Vidal steered for Mombas, where he arrived on the 3d of December. The chief was anxious to place the fort under the British flag, in which Captain Vidal declined interfering, but, as before stated, it was subsequently done by Captain Owen.

There is not a more perfect harbour in the world than Mombas, with good anchorage, well sheltered, shore steep-to serving as wharfs, and a rise and fall of twelve to fourteen feet. The city is built on an island three miles long and two broad, surrounded by cliffs of madrepore which might be rendered impregnable. It has great commercial facilities, and if occupied as a military station would be very serviceable in promoting the civilization of central Africa.

The town is divided into two parts, one inhabited by the Arabs, the other by the Sowhylese, all in a wretched state. From Mombas the Barracouta ran along the coast to Pemba, which island is thirty miles from north to south, and eleven from east to west; it is not in any part more than two hundred feet above the sea, of a coral formation, but covered with a rich and productive soil. The shores of the main land opposite are low, but covered with trees, and apparently fertile; the coast is sandy, with cliffs of coral

in some places, while parallel to it, at the distance of four or five miles, there exists a line of sand and coral reefs with deep water between and inside, but to seaward the depth is nearly unfathomable.

After passing the river Pangany they steered for Zanzibar, an island nearly twice the size of Pemba, which in other respects it closely resembles; it produces abundance of grain and sugar. The islands and reefs between Zanzibar and the main form numerous harbours, safe and not difficult of access; but at Zanzibar itself, there is not one land-locked port. The town and fort resemble those described at Lamoo. Opposite Zanzibar the coast is low, but lined with villages, which are conspicuous from the cluster of cocoa-nut trees in the midst of which they are built. The climate is particularly fatal to Europeans. At no place were supplies so good and cheap as at Zanzibar,—moderate sized bullocks were five dollars a head, sheep of the Tartar kind cheap, two dozen fowls for a dollar, and sugar at twopence a pound. Latham's Island was visited; it is of coral formation, oval shaped, about a thousand feet long, and ten or twelve feet high, accessible only on the south-west side by a small shelving beach of coral sand; the surface is composed entirely of the excrement of sea-fowl, and the island is literally covered with them.

Quitting Zanzibar, Captain Vidal proceeded to the survey of Monfeèa, a long and narrow island, lying nine miles from the main, and rising abruptly from an unfathomable depth, covered with trees, and surrounded by a labyrinth of shoals and islets. The channel between it and the main is so thickly studded with coral shoals, as to be almost impassable for vessels. From this they went to Great Quiloa (Keelwa), one of the finest ports in the world, but without anchorage outside, as the depth is unfathomable: the extensive lagoons inside abound with hippopotami, and the forests with leopards. Previous to the arrival of the Portuguese, who captured and burnt the place in 1505, Quiloa was one of the most considerable Arab possessions; the climate obliged the Portuguese to abandon their conquest, after having erected a fort, but the town never again rose to its former state; a miserable village occupies the site, and wretched hovels are blended with the ruins of the once opulent city: it is now under the Muskat government. Prosecuting the survey to the southward, they anchored off the river Lindy; on the northern entrance of which is a small straggling town, lying very low, and amid swamps. About eight miles up, the river branches into several small channels, forming an archipelago of low islands, covered with mangroves; on each side, the land rises into lofty hills, covered with verdure.

The next anchorage was Mikindany Bay, at the bottom of

which is a small river and an extensive basin, with a deep but narrow and winding entrance. On the side of a steep hill is a fine castellated Portuguese building, kept in neat order, and apparently garrisoned.

Coasting along a low, rocky, unfathomable shore, and passing Cape Delgado, they anchored at the Querimba Islands, which lie immediately to the southward. They are all low, formed of coral, with long flat reefs extending eastward. The harbours are excellent; but Ker and Querimba are the only two inhabited. The town of Tho is the frontier Portuguese post to the northward, and is more strongly fortified than the generality of their possessions. It contains one large fort, built in 1791, and two smaller ones. The garrison consists of two hundred soldiers, either creoles or negroes.

Pomba Bay is one of the finest harbours on the coast; the entrance is between two rocky points, one and three-quarters of a mile across, and opening into a basin, nine miles long and six broad, with sufficient water for the largest ships. The Bay of Almeyda also, which they next visited, offers a safe and commodious anchorage, sheltered by the shoals of Mamabala and Indujo. Falling in with the Leven, both ships repaired to Mozambique, to refit and re-victual.

From this, the Leven, touching at Delagoa Bay, where they found most of the garrison had been murdered by the natives, sailed for the Mauritius, and thence returned to the survey of the eastern coast of Madagascar. The first place at which they commenced was the harbour of Tamatave. The channels into the anchorage are narrow, and formed by coral reefs: the town has no more than eighty habitable dwellings, surrounded by palisades; the whole population amounting to about two thousand. Large fat bullocks cost three dollars and a half. The next place they visited was Foule Point, where they procured a pilot, and surveyed the coast as far as St. Mary's, Isle Madame, which they found greatly improved since their last visit. Hence they proceeded, examining the coast to Port Choiseul, at the bottom of Autongil Bay. From Port Tangtang, northward, the coast assumes a bolder aspect; the hills, which before were distant, here rest upon the sea, forming several stupendous rocky promontories. A boat, which ascended the Maransectzy, found the banks of the river low and marshy, but covered with valuable trees; the gum-copal, mango, and banana are very plentiful; also the water-melon, and the modesta and warra plants. They saw some huts and a great quantity of cattle; and the natives were preparing the land for rice, in the same manner as at Java and Sumatra. The native huts are raised on posts, eight or ten feet from the ground. English cottons, woollens, arms, and ammunition may be readily

and profitably exchanged for bullocks, gum copal, and other native productions. A fish, called the humpback, abounds on this coast till August, when it is driven away by the sperm whales.

Continuing their operations along the coast, they arrived at Diego Sauriez Bay, or British Sound, one of the finest harbours in the world. At the village, called Prauguromodo, the natives are a tribe of the Seclaves; they are miserably poor, and have nothing but bullocks. Their huts are very low, the roofs composed of palm leaves, and the doors not larger than those of a pig-stye; the sleeping-places are of bamboo, raised about three feet from the ground. A species of guinea-fowl was seen here, with a long tail, marked like the argus-pheasant, but the plumage downy and more beautiful. The substratum of the surrounding hills is composed of sandstone and columns of madrepore; the more distant appear to be of volcanic production. The place abounds in shells, particularly the harpa.

Having concluded this survey, the Leven proceeded to fix Cape Ambré, the most northern cape of Madagascar, and then returned to Isle Madame, and continued surveying the coast in the vicinity, looking into all the bays and harbours, and passing many islands, most of which are well wooded, but others mere rocks of madrepore. The Seclaves live on the coast, for the purpose of fishing, during the northern monsoon; but retire into the interior, to till the land, during the southern monsoon. Touching at Johanna and Mozambique, the Leven arrived at Mombas, where she fell in with the Barracouta, which vessel had been sent, to learn tidings of the expedition, to Senna, which proved melancholy indeed. On their arrival at Quilimane, they learnt that the three officers had died, and their two black servants were waiting at the town. Mr. Forbes died the day previous to their reaching Senna; Lieutenant Brown at Senna; and Mr. Kilpatrick, the assistant-surgeon, returned as far as Chaponga, where he also fell a victim: their passage, including stoppages, occupied from the 23d July to the 17th August,—five days on the Quilimane to Boca do Rio, where they disembarked, and travelled across a flat, well-cultivated country, abounding in villages, till they reached the Zambezi, at Marooro. The torrent was so impetuous over the numerous sand-banks, that the party could only advance at the rate of one mile and a half an hour. The banks were one unvaried line of rushes and long grass.

The plain on which Senna stands is covered with tamarind, mango, and cocoa-nut trees; the town is interspersed with stagnant pools, and has only ten houses of European structure. The river, as far as the eye could reach, wound majestically through the plain; and in it gold is found pure in the alluvial deposit. Gold, ivory, slaves, and tiger skins are the principal exports; for

which they receive cottons, woollens, arms, ammunition, spirits, and groceries. The garrison of Senna consists of three officers and sixty privates, of all colours and countries. The town of Tete, said to be far superior to Senna, is distant sixty leagues, but owing to the rapidity of the current, six weeks is considered a good passage for canoes; the village of Zumbo is fifteen days, and that of Zumboa twenty days, beyond Tete.*

Having picked up the Albatross, which had been surveying St. Augustin and Tullia bays, the Barracouta commenced the survey of the coast to the northward. The coast to Boyanna Bay is almost an unvaried low, marshy plain, covered with stunted trees, irrigated by barred rivers; bounded by a line of sharp-pointed coral masses, uncovered when the tide is out: and the coral islets and reefs that skirt the coast are numerous and dangerous. The islands seldom exceed a mile in circumference; and it is remarkable that all the reefs extend to the southward.

The northern half of the west coast of Madagascar is indented with bays, harbours, and rivers, admirably adapted for commerce; these are, however, all neglected, with the exception of Bembatooka, which is the estuary of several rivers: it is seventeen miles deep, and three and a half across at the entrance; inside it is nearly eight, but about midway the shores approach, leaving a narrow channel, through which the water rushes, and has scooped out an abyss of sixty-three fathoms in depth. The shores are low and covered with mangroves. Bembatooka itself is an inconsiderable village; but Majunga, on the north side of the bay, is a large town. The inhabitants are composed of Arabs and Malegashes, and the style of buildings the same. The slave-trade was the principal source of wealth, but this had been abolished by Radama, who had recently conquered the place: they had an extensive traffic in bullocks, with the Americans particularly, who jerk the beef, preserve the tallow, and cure the hides on the spot. There is also some commerce in bees-wax, rice, and gums.

The following information was gained relative to Radama, the celebrated chief of a large portion of Madagascar, then alive, but now unfortunately dead. He was a man far above his countrymen in exemption from prejudices, anxious to learn, and resolute in carrying on his determinations. He willingly relinquished an annual revenue of sixty thousand dollars, to meet the views of the English on the abolition of the slave-trade; receiving a supply of arms, ammunition, clothes, and money, from England, to the amount of about ten thousand dollars annually, instead. His good faith in treaties was always maintained. The order of succession to the crown, though hereditary, was singular, arising from the laxity of morals: the king's sister's eldest son was the heir apparent, but this

* See the particulars of this Expedition more at length, vol. ii., p. 136.

custom Radama abolished. Plurality of wives was allowed, and it was expected that the king should have twelve,—seven or eight of his own choice, the rest his father's wives, who are only nominally his. He was also obliged to call a kaba, or meeting of the chiefs, before he could undertake any act of importance; but by proper management of his council, Radama contrived to gain all his ends, and to abolish many superstitious customs.

The garrison of Bembatooka consisted of a vast assemblage of huts, surrounded by a lofty bamboo fence, about half a mile in circuit, with two entrances towards the town, and another to the country. The discipline of the troops was strictly kept up after the European manner. Little information could be gained respecting Tarnanaruvoo, the capital of Ovah; its situation is not certain, but appears to be nearly west of Tamatave, forty leagues in a direct line from the coast, on the ridge of mountains which run through the centre of Madagascar. It is described as being of considerable extent, and the houses of the higher classes constructed and furnished in a superior style. Gold and silver chains, of beautiful workmanship, are manufactured there, which are used as current money; also excellent silks, which are dear. The population of Ovah is immense, consisting of mulattoes and blacks, the former of whom appear to be considered superior. Some missionaries have established seminaries, and greatly improved the education of the natives. The commerce of the east coast of Madagascar, in grain, bullocks, and cloth, is considerable, but all carried on in foreign bottoms.

The survey was continued towards Boyanna Bay, where there are two rivers, each affording capacious harbours; the northern is termed Makumba, and has a small island off it. Hence, staying one day at Majunga, the ships passed on to Majambo Bay, which is a fac-simile of Bembatooka. Here they found an Arab dow jerking beef, which is done by cutting it into narrow strips, and suspending it in the air till it becomes hard and dry, without using salt. It appears that Majambo was formerly inhabited by Arabs, and many of their tombs are still visible, blackened by age.

Continuing along-shore they anchored at Nareenda Bay, the islands at the north entrance of which afford excellent harbours. Sancasse, the largest, is inhabited. Opposite to these islands the river Luza, after forming an extensive lagoon eight miles inland, discharges its waters into the sea, through an extremely narrow and deep channel. At Nareenda the stupendous peak of Matowla was first seen. After leaving this place, they came to a group of lofty volcanic mountains, to which, in honour of Radama, they gave his name. Beyond these is the high and conical rock of Keyvoondza, situated, with two or three more islets, near the west

point of Passandava, the broadest and deepest bay on the west coast of Madagascar; a village of the same name lies at the head of the bay, and consists of a few half-ruinous huts; the language differs from the rest of the Malegash. Near this village the mountains that surround the stupendous peak of Matowla take their rise; they are of volcanic formation.

They sailed again for the West Minnow group, which consists of twenty-seven islands and rocks, basaltic and lofty, except two or three that are of coral, and low. Having examined the East Minnow, the Barracouta sailed for Mombas to rejoin the Leven, where they learnt that Lieutenant Reitz, who had been left governor, had fallen a victim to the fever, caught while on an expedition up the Pangany.

The two ships again parted company, the Leven for the Seychelles, the Barracouta to survey the labyrinth of rocks and islands between Juba and Kwyhoo Bay. These amount to nearly five hundred, many measuring from two miles and a half to four and three-quarters in length, but the majority are of inconsiderable size, rising abruptly from and overhanging a narrow line of reefs; about two miles outside these islands is a coral bank, which renders the approach to the coast dangerous. Throughout the whole extent of these islands, to which the name of Dundas was given, (a hundred and fifty-four miles,) there is but one secure retreat for vessels at all times, which is at the entrance of a river now called the Durnford. A boat ascended this river seven miles, and found the country capable of the highest cultivation, varying from a light red to a dark fine soil; two villages were seen on the south shore, apparently inhabited by the Gallas, a savage and treacherous people. Besides this, there are two other rivers, Shamba and Toola, but with shallow entrances. The Barracouta, having lost her anchors, went to Lamoo, where she found some large trees of the mangrove species, uncommonly hard, and of a specific gravity heavier than water, some upwards of seventy feet high, and one and a half in diameter; with these they constructed a wooden anchor, which answered as well as an iron one. The squadron subsequently joined company again at Mombas, and then sailed for the Seychelles.

After surveying the low coral group of Corgados Garagos, they stood round Cape Ambré and commenced the coast thence to Cape St. Sebastian, the bays in which were so deep as to lead them to suppose they should find a channel through to the opposite coast. The islets along this shore much resemble the Dundas and Minnow groups, with bold cliffs and luxuriant hills on the main. The country abounds in wild cattle. They next proceeded to examine an extensive and detached bank of soundings, and thence continued to Bembatooka, where they found that the

place had been attacked by the Seclaves, and the town of Majunga burnt to the ground. Hence both ships, after touching at Mozambique, proceeded to St. Augustin's Bay, where they captured a slave-vessel. King Bahbah had died since their last visit, and his subjects, as a mark of respect, had shaved their heads, which considerably altered their appearance. The prize was taken to the Isle of France, and the ships then, after remaining two days at St. Mary's, anchored in Tamatave Bay. In passing Foul Point, however, the Barracouta, being attracted by the report of two guns, stood in to the harbour. The signal had been made by the British resident, there having been an insurrection among some of Radama's subjects, and the object was to prevail on Captain Vidal to transport a body of troops to Point L'Arée, which was agreed to, and the consequence was a complete stop to the rebellion. From Tamatave they touched at Port Dauphin, then doubled the southern extremity of Madagascar, in order to explore further the Star Bank, in doing which they were nearly wrecked. They next anchored for a day at St. Augustin's Bay, and then steered for Delagoa, having examined the long low coral islet of Bassas da India, or Europe Island. Having completed the survey of the outer bar, they sailed for the Cape of Good Hope, stopping in their way at Port Natal, where they were visited by Lieutenant Farewell, R.N., who had settled there in March, 1824, having an extensive grant of land from King Chaka.

At the Cape they were employed making a survey of Table Bay, and thence sailed, in prosecution of orders, on the survey of the western coast of Africa. The first anchorage was Walfisch Bay, at the head of which is a fine port; they here communicated with some Hottentots, fac-similes of the prints in old travels, clothed in skins, and the faces covered with soot and grease. They examined Rostra da Pedra Bay, a good anchorage, and coasting along to the northward, the bottom being of a dark muddy sand which turned the leads, anchors, and chain-cables black as if painted, arrived in Great Fish Bay, where they looked in vain for Nourse's River, discovered by the Espiegle in 1824; but it appears from others which they witnessed that they were closed in the dry season, and broad rapid streams during the rains. Passing Capes Albino and Negro, on the latter of which they observed the pillar of Bartholomew Diaz, the Leven anchored in Port Alexander, and thence continued to the northward to Little Fish Bay. The rocks on this coast appear of two or three different kinds, but principally sandstone with petrifactions imbedded; others are of primitive or volcanic substances. Farther northward, the land was composed of red earth, intermixed with blue clay and yellow sand; this was the first red earth seen on this side of Africa, most of the eastern coast being of that colour. The

next place they touched at was Turtle Bay, the shores of which are fertile, and appear to be well inhabited, whence to Cape St. Mary's the coast is steep and precipitous, intersected with numerous deep ravines. The mountains from Cape St. Mary to Espiegle Bay are of granite, interspersed with a great quantity of mica and quartz: a cliff, abounding in the former, reflected the sun's rays like a mirror. Continuing their course to the northward, they passed the low sandy point of Victoria, or San Francis; after which they saw many native villages with huts. The country was generally more diversified, the valleys fertile, beautiful, and studded with huts. They next anchored off Benguela, where they procured supplies; and sailed again for St. Paul de Loando. The port and town were anciently much to the southward of their present situation; the former is now blocked up, while the latter is in ruins. The two vessels stood over to Ascension, and subsequently came in on the coast at the Isles de Los; after surveying which, they sailed for Sierra Leone, where they found the tender which had been employed in the river, and all proceeded to the survey of the Bananas, Turtle Islands, Sherborough River, and the Shoals of St. Anne.

Having again visited Sierra Leone for supplies, their next object was the Bijooga Islands, among which they grounded, the ship at low water being left so dry that the people could walk round her. After having got afloat, two boats were sent to recover an anchor, and were attacked by six canoes, with about forty men in each, armed, about half of them, with muskets, the others with spears; but a volley of grape and musketry made them hastily retreat.

From the Bijoogas they sailed to Port Beaver, where the boats were employed surveying the Rio Grande and Bulama Harbour. The native name of Rio Grande is Butolah River; the former appellation being more applicable to the Jeba, which is navigable five miles beyond Bissáo. Bulama Harbour is from one mile and a quarter to half a mile broad, terminating in two small branches, running N.E. and S.E. Many small creeks fall into it, whose banks are covered with mangroves to the water's edge; but the country at the back is covered with thick forests of large trees. The country on the right bank of the Rio Grande is called Guinara; and produces gold, ivory, wax, hides, and horses: it is very populous in the interior. The banks of the river are studded with ant-hills, of the form and height of the native huts, giving the appearance of dense habitation.

Bissáo is an excellent and spacious port, the site of a Portuguese establishment. After having completed the examination of this part of the coast, the Leven returned to Sierra Leone.

The Barracouta, on leaving the Cape, first touched at Dassen

Island, lying about six miles from the main; it is one mile and a half long by one broad, bounded by a reef, except to the eastward; it is the property of a gentleman at the Cape, who derives a considerable revenue from the eggs of penguins and gulls, twenty-four thousand of which are collected every fortnight, and sold at the Cape. The island is absolutely sterile, and formed of rugged masses of granite, without fresh water. They next anchored in Saldanha Bay, the country still rocky and sterile, off Cape Deseada, rising into abrupt craggy eminences and broken ranges of hills. At the southern extremity of Angra Pequena Bay they observed the remains of a cross erected by Bartholomew Diaz. It had been thrown down, probably in search of coins supposed to be buried under it; the inscription was almost obliterated. In the next one hundred and thirty miles they had passed the limit of the rocky country and came abreast the desert, rising into lofty hills of light-coloured sand, with occasionally a rocky patch and a few tufts of parched grass.

On arriving at Cape Negro, the desert partially ended, the first tree (a palm) for many hundred miles was seen, also a hut and a native; leaving this, the country continued to improve, though still poor. At Benguela they anchored to survey the bay; the buildings in the town are erected with half-baked bricks, and mud for cement, the whole coated with a thick plaster of shell lime; the roofs are alternately covered with boards and a succession of reeds, placed at some little distance apart, so as to admit freely both light and air, but totally to exclude rain. The site of the town is a marsh, full of stagnant pools, and almost inundated in the wet season. The chief defence is a large fort fast mouldering to decay. The population does not exceed three thousand, the majority of whom are either free blacks or slaves. The natives of the interior, it was said, will not permit the Portuguese, or any other people *with straight hair*, to enter their territory. The trade of Benguela, which consisted chiefly of slaves, has greatly fallen off lately. They saw no sheep, but bullocks and goats were in great abundance.

St. Paul de Loando, their next station, is a large city, containing several churches and many private and public buildings, of which, however, a considerable portion are now in ruins. It is also a bishop's see. The better part of the town is built on an eminence, beneath which, along the sea shore, are the hovels of the black population. The town is well fortified; the harbour is three miles and a half in length, deep, and commodious. The population is very considerable; the principal commerce is in slaves, ivory, and bees-wax. The market is well supplied, especially with fruit and vegetables; bullocks and goats are also plen-

tiful. It is the principal Portuguese settlement on the western coast of Africa.

Leaving St. Paul de Loando they continued to the northward, anchoring every night for the purpose of surveying, till they entered the Congo, where they remained six days waiting for a sufficiently strong sea-breeze to enable them to stem the current. At the distance of twenty-five miles from the southern entrance, the Congo is not more than a mile and a half wide, and a little above, a broad sand-bank divides the river into two narrow but deep channels. The banks on either side are low and swampy, principally covered with two different kinds of mangroves, one a low bush, the other a stately tree; there are also many kinds of palms, two of which bear fruit, one of them poisonous. The natives are perfectly black, but their noses are not quite so flat, or their lips so large, as among the generality of negroes; the clothing consists of a single wrapper of dungaree or cloth, round the loins, and umbrellas appear to be the emblems of rank. They wear numerous charms or "Fetiches," in which they place great faith. In the course of the survey, a boat that had grounded on a shoal was attacked by twenty-eight canoes, with four to six men in each, but a volley of musketry caused them to retreat. The great body of water discharged by the Congo has scooped out a channel above Shark Point seldom more than a mile across, but varying from forty-five to two hundred fathoms in depth. The great force of the current, however, appears to be superficial; it is about four miles an hour. Thirteen miles from the entrance, the water was perfectly fresh, of a dingy red colour; it fermented in a few days, and remained for some time in a highly putrescent state, discolouring silver greatly, but after four months it became perfectly clear and colourless, without depositing any sediment.

From the Congo the Barracouta sailed for Kabenda, the intermediate coast possessing great variety of scenery, sloping ridges of park land, and valleys abounding in groves of trees, and apparently very fertile. Kabenda, though trading in ivory and camwood, is chiefly resorted to by slavers; the bay is skirted by numerous huts, and the whole country seems to be densely peopled, the natives resembling the Congo people, but their language being totally different. The adjoining scenery is composed of lofty cliffs, verdant hills, and deep luxuriant vales; there are no bullocks, but vast loads of wild buffaloes; sheep are scarce, but goats are plentiful; also ducks and fowls. They next visited Loango, an excellent and well-sheltered bay, with more varied and interesting scenery than Kabenda; numerous lagoons exist here, about two hundred feet from the sea, running parallel to the shore. After leaving Loango, the hill scenery was succeeded by a low, woody,

and swampy flat. The coast was shoal as far as Cape Lopez, when it became suddenly very deep, even close to the shore. Cape Lopez is low, swamped, and covered with wood; the bay formed by it is fourteen miles deep, and has several small rivers and creeks running into it. On the left point of the largest and northernmost is a straggling but extensive town, the houses formed of palm leaves, neatly interwoven upon a slight wooden frame; this was called King Passol's town. Hence they continued along a low swampy coast till they arrived at the river Gaboon, which combines every facility for trade, the navigation being easy, and having no dangerous bar at its entrance, and the ascent free from danger for many miles. The trade is principally in slaves and ivory, but their mode of barter is very tedious.

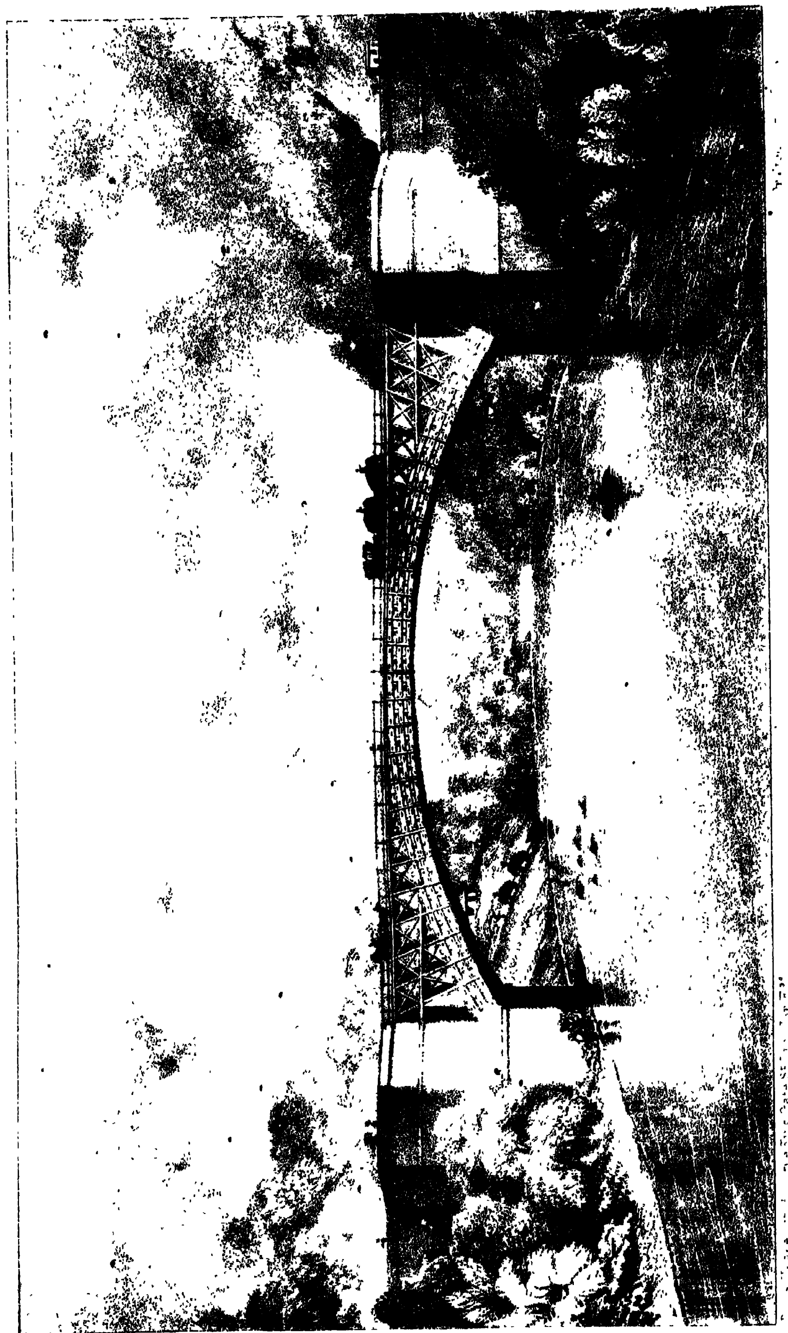
Eight miles farther is Corisco Bay, which is thirty-two miles north and south from Cape St. John to Cape Estçrias, and fifteen from the islands at the entrance to the river Moonda. The surrounding shores are thickly clothed with verdure, the numerous isles with which it is studded being also green to the water's edge. Except two towns on Cape St. John subject to the king of Corisco, all the other places in the bay are inhabited by Bullamen, who are wild and savage, but exceedingly timid, and inordinately fond of tobacco.

The Barracouta next anchored off the river Camaroons. The intermediate coast was low, covered with trees to the water's edge, and appeared to be thickly inhabited, from the numerous villages, and canoes; which last were of diminutive size, capable only of containing one person, who, on touching the shore, jumps out and carries the canoe on his shoulder. When approaching the Camaroons, it appears far more considerable than it really is, for within the seven miles space which the entrance exhibits must be included the mouth of the Malembe River, which branches off in a N.E. direction. The best channel is by the western shore, where there are several extensive creeks; Suallaba, on the eastern point, is low, as well as all the country bordering on the river. At Bimbia, the next river, they were visited by some large canoes, capable of containing fifty men, who plied their paddles with great swiftness and exactness. Being short of provisions, the Barracouta was obliged to repair to Fernando Po for a supply, whence she returned to the Bonny River, and found seven English vessels loading with palm oil, and several slavers. The entrance presents a broad expanse of waters, consisting of the Bonny to the eastward, and New Calabar to the westward. The former is the more considerable, though both can be entered by vessels drawing eighteen feet water; they are deep inside, and the anchorage is always safe. Bonny-Town is situated on the eastern bank of the river, near the mouth, surrounded by numerous stag-

nant pools. The huts are principally constructed of stakes plastered with mud, and roofed with palm leaves. The superstitions of these people are numerous and extraordinary. The bar of the river having sometimes proved fatal to vessels resorting thither, they consider this the act of some evil spirit, to conciliate whom they make an annual sacrifice of a human being; the handsomest and finest youth is selected, and on a stated day carried out in a large canoe, attended by the principal men of the town; he is then made to jump overboard, when the canoes paddle on shore, leaving their victim to his fate. A similar ceremony is performed at the New Calabar. After leaving the Bonny, they sailed to the westward to Cape Formosa, whence they surveyed the coast to Benin River, which is a mile and three-quarters wide, with a bar at its entrance, twelve feet at low water; a heavy swell breaks over it and renders it dangerous in bad weather; human sacrifices are also offered for its removal. Booley Town, at the southern entrance, with another on the opposite side, and the neighbouring villages, are under the King of Benin.

Continuing the survey, they next stopped at the Old Calabar, the most considerable river, as regards magnitude, that came under their observation. Its entrance is a vast expanse of water, into which two large rivers are discharged; it is nine miles across, but the rush of water is, nevertheless, very considerable. The traders ascend about thirty miles. Time only admitted of examining the bar, when they proceeded to Rio del Rey, passing Backassay Gap, a creek that communicates with Old Calabar, but is not navigable for vessels of burden. The Rio del Rey, though giving an idea of considerable magnitude, on being approached is in reality but an open shallow bay, with several creeks branching from it; one, larger than the rest, is four miles and a half wide at the entrance, but rapidly decreases into a narrow channel. The shores are thickly peopled, the inhabitants living chiefly on fish; the villages are large and built on the skirts of the bay.

Between the rivers Benin and Old Calabar the coast is uniformly low and flat, unbroken, even in the distance, by the slightest elevation, and closely intersected by rivers. From Cape Formosa to the river Benin, a distance of one hundred and sixteen miles, there are not fewer than eleven of some magnitude; while eastward of Formosa, as far as the Bonny, are twelve more,—making twenty-three rivers in a line of coast of two hundred and forty miles. The size of these rivers indicate that they flow from a considerable distance in the interior, while the rapidity of the stream is a proof of a mighty source. It seems impossible, also, from the formation of the coast, that they can run parallel to each other; they must, therefore, radiate from some central district,



and divide and unite, as it is known that the Benin does with the Warree, and, as reported by the natives, with the New Calabar. The communication between the Bonny and the Andony has also been established.

The base of the Camaroon mountains occupies a space of twenty miles in diameter, the highest peak being thirteen thousand feet above the sea, covered with trees of luxuriant growth nearly to the summit; one bare brown ridge alone appears like lava. More distant is the Rumley Range, formed of rugged masses, and seen upwards of sixty miles. Qua Mountain, sixty-four miles N.W. of Camaroon, is also a stupendous elevation; it was seen at a distance of nearly eighty miles.

From Rio del Rey, the Barracouta returned to Fernando Po, and thence proceeded to Sierra Leone, where she rejoined the Leven. An officer and party, that had been previously despatched in the African steam-vessel to survey the river Gambia, which they ascended as far as Macarthy's Island, one hundred and eighty miles from its mouth, rejoined the squadron at Sierra Leone, and they all sailed in company for England, where, after touching at Porto Praya, they arrived, after an absence of five years, during which the expedition had traced about thirty thousand miles of coast-line.

II.—*Account of the Mahavillaganga;* abridged from the Journal of an Excursion to explore it, undertaken, under Instructions from Government, by R. Brooke, Esq., Master Attendant at Trincomalie. Colombo. 1833.

The Mahavillaganga, well known as the largest river in the Island of Ceylon, takes its rise from the mountains in the Kandyan country, and after encircling the city of Kandy, flows in an easterly direction almost as far as Bintenne, when it bends suddenly to the northward, and after running some distance, divides into two streams, one falling into the great bay of Trincomalie, the other, which is called the Virgel, into the sea, twenty-five miles southward of Trincomalie.

In taking a cursory view of the Mahavillaganga, and the country through which it flows, it appears that the river from Kandy is a mountain torrent till within seven or eight miles above Bintenne, whence it flows in a free course to Calinga, with the exception of a slight interruption twenty-eight miles below Bintenne. The width of the river from the termination of the torrent part to Calinga is from a hundred and fifty to two hundred and fifty yards, and the course is shallow during the dry season, (from one to two feet deep,) but rising twenty-five and thirty feet at the period of the freshes.

At Calinga the bed of the river is rocky for about twelve miles, with slight falls from one to three feet, which, with the rocky bed, are visible only when the river is low, as at half rise the rocks are not perceptible, excepting at the northern or lower end of this rocky part properly called Calinga, where, for the distance of a mile, the river is divided into several channels impeded by large stones, which offer an impediment to navigation, in its present state, at any time.

From Calinga to Trincomalie the river is perfectly free from rocks; the distance by water is about eighty miles, and the country on either side but little cultivated, though there are extensive traces of former cultivation. It is, however, but seldom navigated, and only by the canoes of wood-cutters at short periods of the year. This is owing to the river having been diverted from its natural course, and directed into the Virgel, which was formerly but an insignificant stream, but has now become the outlet of the river, excepting for a few days in the year.

At the junction of the Virgel, the Mahavillaganga takes a very acute elbow turn, in the bight of which the Virgel branches off. Near the mouth of this stream is a large Gentoo temple, with extensive paddy plains attached to it; the country around for many miles is a flat, and has been extensively cultivated. It was thus necessary, at one time, to obtain a greater supply of water than the ordinary stream of the Virgel furnished, and the priests of the temple, taking advantage of the sudden turn of the Mahavillaganga at the junction of the Virgel, widened and deepened the commencement of this stream, thus easily directing the main body of water down it; since which it has increased and divided into several streams, overflowing at the least rise of the river some extensive plains, which in consequence are now rendered incapable of cultivation. A greater evil is thus at present experienced by the overflow of the Virgel than that which formerly existed from a want of water.

In consequence of the river being thus turned into the Virgel, its proper bed from the junction to Goorookelganga (a distance of ten miles below) is perfectly dry nearly the whole year, and would continue so to the mouth, but for a narrow cross stream called Adambanar, which, branching from the river above the junction, falls in again at Goorookelganga. This has erroneously been considered a part of the main river, and the dry bed alluded to, supposed to be merely a canal choked up by sand; a mistake originating in a very careless inspection, as the dry bed of the river is from a hundred to two hundred yards wide—whereas the Adambanar, or cross stream, is only from twenty to thirty yards wide, and in one place not more than ten yards. Beyond doubt, therefore, this supposed canal is the river, dry at certain periods in consequence

of the upper stream being diverted into the Virgel, and only navigable a short period of the year, when the freshes set down from the upper country. Only during the very high rise of the river does water flow round the elbow sufficient to float a small raft of timber, at which period this acute turn becomes very dangerous, great skill being requisite to direct the rafts, as, should they take a direction towards the Virgel, (which, from the very strong eddies that then exist, they are apt to do,) the people swim for the shore, abandoning the timber, which is lost by flowing out to sea at the mouth of the Virgel. In this manner much timber is annually lost, it being impossible to navigate rafts down the Virgel, and it was only a year since that, out of six unfortunate men who were taken down the Virgel with their rafts, five lost their lives.

Very great advantages would, however, be derived from restoring the Mahavillagânga to its old channel. The only export from Trincomalie is timber, chiefly consisting of halmaniel, ebony, and satinwood, each well known for their valuable qualities, but at present forming but a small return for the great quantity of grain and cloth imported. Satin and ebony grow in all the jungle about Trincomalie, especially upon the sea-coast; but halmaniel is chiefly procured in the interior on the banks of the Mahavillaganga, cut during the dry season, and remaining in the forest for many months before it is rafted down. Should the woodcutters (who are generally inhabitants of Trincomalie) have returned to their homes, and neglected to take advantage of the full rise, they lose the opportunity of getting the rafts down. Circumstances of this nature often occur, when the timber must remain for another year, to the loss and detriment of the timber merchant, for in the mean time it becomes deteriorated from rot, and is liable to be stolen, or washed away by a sudden overflow of the banks. An instance of this occurred in January last, when three hundred and seventy-five logs of timber were lost in the Virgel. Timber has also been detained in the jungle by neglect till it became so decayed as to fetch only one-sixth of its original value. If, therefore, the river were opened, timber would be no sooner cut than floated down, and the merchant be enabled to exercise an efficient superintendence over his property. At present, being obliged to advance wages to the wood-cutters, he is completely at their mercy, and instances are not unfrequent of timber which has been felled for one person being sold to another.

As another proof of the necessity for removing these impediments, (setting aside advantages that must eventually accrue to Government,) it may be remarked, that timber in the forests is cut into logs of about eighteen feet long and twelve inches square, although the trees are capable of furnishing logs of a much larger

size. Timber thus reduced in size must also be so in value. It is particularly worthy of notice, that the only timber now brought down by the Mahavillaganga is such as will float, whilst ebony, satin, cattamanack, and ironwood, abundance of which are to be found growing on the banks and in the Tambankadewa and Vedah country, being too heavy to float, are altogether neglected. If the river were opened, boats, canoes, and rafts would be able to convey these woods to a market, and there is not the slightest doubt but that the advantages to be derived from such an undertaking would soon repay the expenses.

There are several kinds of timber too cumbersome to be brought to Trincomalie in consequence of the impediments at Kooranjemony, especially Wallaporte and Peon. The former is used in the construction of large canoes, the trees girting twenty-eight and thirty-two feet; and Peon is well known as being calculated for ships' masts. To prove how essential these spars are, it may be mentioned that when the ship Circassian of five hundred, and brig Grecian of two hundred tons, came into Trincomalie harbour dismasted, the first paid to the naval yard 110*l.* for a crooked Peon spar, (afterwards turned out of her at Calcutta,) whilst the captain of the Grecian paid about 50*l.* for a Peon foremast, and left the port in great distress for want of a mainmast.

By removing the impediments at Kooranjemony, the river would become easily navigable to Calinga, (eighty-three miles from the sea,) thus opening the Tambankadewa and Vedah country, and instead of the present limited trade being carried on at a few places right and left of the river, a more extensive and prosperous one would rise in its place. Grain grown in the former district, together with bulky merchandise, would obtain a cheap carriage and an access to the Trincomalie market.

At present, the grain produced there is collected at a place called Tambale within the district, sold to the highest bidder at the Trincomalie Cutcherry for about threepence per parrah, deliverable to the purchaser at Tambale, sixty miles from Trincomalie. The circumstance of this grain selling for threepence at Tambale, and eighteenpence in the Trincomalie bazaar, speaks for itself. If a free communication were once opened, government grain would fetch 200 per cent. above its present price; the inhabitants in the interior would benefit, first, by dispensing with cattle conveyance; secondly, by finding a ready sale for their produce; and thirdly, by obtaining articles from the maritime parts, namely, salt, cocoa-nuts, salt-fish, &c. much cheaper than at present. Even now the inhabitants up the river take every advantage they can of conveying their merchandise by water whenever the depth is sufficient.

Having adverted to the advantages that must arise to the inha-

bitants in the Tambankadewa district, and the sources of additional revenue to government, it is necessary to remark that the impediments at Calinga are not of so difficult a nature as to prevent these advantages from being extended so high up as the populous district of Velasse and the Kandyan country, to which the articles of consumption required from the maritime provinces at present are conveyed by cattle, principally from Hambantotte and Batticaloa. Of course this method of carriage must be infinitely dearer than a water conveyance; and when the extensive revenue this colony derives from salt alone is taken into consideration, it must be obvious that a water-communication would naturally extend the consumption of this article. Should this river ever be thrown open, produce and merchandise from the sea-ports of Ceylon would find their way up, give encouragement to the coasting trade, and undoubtedly benefit the population of the interior, giving them the advantage of bartering their produce for tobacco, cloths, cocoa-nuts, salt-fish, &c. &c.; in fact, it is impossible to say what advantages may eventually arise by opening such a line of communication.

The river forms the western boundary of the Vedah district; the country is free from swamps and covered with low jungle, and is capable of producing grain, namely, Indian corn, natcharine, &c., which the people no doubt would cultivate in abundance had they a water communication enabling them to send it to market.

The Vedahs are erroneously supposed to be wild and uncivilized, but are in truth mild and inoffensive. Though averse to cultivation, they willingly undertake the felling and removing of timber.

The country through which the Mahavillaganga flows was beyond doubt once extensively cultivated; but, at present, there are only a few small villages scattered around on either side of its banks, the paddy-fields annexed to which are chiefly irrigated by the river; the inhabitants, taking advantage of its rise, direct the water to tanks formed near their grounds. Of late years, however, many spots have remained uncultivated in consequence of the river overflowing its banks and inundating the plains. This evil is becoming worse, particularly in plains irrigated by the Virgel, a circumstance which induced the late Mr. Lusignan to visit Koranjemony, in order to ascertain whether the evil could be remedied. This overflow is occasioned by the check the river meets with at this point, at the period when large bodies of water rush down during the freshes, and also from the Virgel being confined and not permitting the water to escape freely. Were these obstacles (so ruinous to the inhabitants) removed, the river would possess a double outlet without any impediment, and would in time force away the masses of sand that for many years have been

collecting at the turns and adding to the obstacles of the river. It is also to be observed, that at the mouth of the Virgel there is a bar of sand thrown up by the sea, only admitting a small boat to pass over it, while the mouth of the Mahavillaganga is very deep, and a quarter of a mile from it, within the great bay of Trincomalie, there are no soundings.

Besides the advantages that must evidently accrue to government by restoring the Mahavillaganga to its former course, it must also be borne in mind that the river flows through a country which was once the granary of the island, and any common observer visiting the Tambankadewa district must be surprised at the vast manual labour spent in the construction of the extensive tanks and canals, now totally neglected, and gone to ruin; so that, instead of the country deriving benefit from them, they have become pestilential morasses. Even now, however, numerous artificial and natural canals intersecting this country are not in so dilapidated a state but that they might easily be restored.

To turn the river into its proper course, it would be advisable to take advantage of a cross stream about five hundred and fifty yards long, cutting off the elbow of the river at Kooranjemony; by making this branch wider and deeper, it would naturally receive and secure the water, which, running down from above in a direct line, would flow into the river below, when it would soon force its way through the sand and prevent the dry bed (ten miles in extent) from forming again.

To check the river, immediately below the upper end of this cross stream, and enable the water to run with greater force in the new line, large trees that are growing about in abundance should be felled and laid across; these, with sand that would collect, would form a barrier sufficient to force the water to flow in the new direction when the river is low, it not being necessary to block up the Virgel entirely. The enterprise is not only feasible, but must prove successful, nor would the expense be so great as might naturally be supposed.

A bridge has been recently thrown over the Mahavillaganga, at Peradenia, consisting of a single arch (principally of satin-wood) of two hundred and five feet span.

The roadway is twenty-feet wide, and its height above the river at low-water mark about sixty-seven feet. The arch is composed of four treble ribs transversely distant from each other five feet from centre to centre.

The sum of the depths of these ribs is four feet, which, with

two intervals of two feet each, makes the whole depth of the arch eight feet.

The beams of which the arch is built are, with the exception of those next to the abutments, from sixteen to seventeen feet in length and twelve inches thick. They abut against each other with an unbroken section, and are secured at the joints by the notched pieces which support the road-way: the latter being held in their position by means of cross-ties both below and above the arch and immediately under the roadway. These cross-ties, with the aid of diagonal braces, which are also locked into them, serve to give stability and firmness to the whole structure.

According to the original design, no material but timber has been admitted into the construction of the arch. The arch was commenced in the middle of July, 1832. The centering was struck on the first of October, and the roadway was completed before the first of January last.

This bridge was designed and set up under the superintendence of Lieut.-Colonel Fraser, deputy quartermaster-general of the forces in Ceylon. Wooden bridges, generally, are condemned as being composed of a very perishable material, but on the principle on which this is constructed, the different parts of the arch may be replaced as they decay. The American wedge bridge is also said to be exceedingly flexible: but this has been completely obviated in the bridge at Peradenia.

Reference having been made above to the remains of ancient reservoirs and canals, found in the interior of Ceylon, the following particulars regarding them are further abridged from the Ceylon Almanack for 1833.

Elhaharah is distant about nine miles from Nalanda, and is a large village, containing about fifty families. The Ambanganga, about two miles from the village, has been checked, and directed inland, for the purpose of feeding several reservoirs or tanks. This conductor, or canal, passes through the village, and the water in it runs strong. The stream is six to fifteen feet wide, and two to three deep, during the time the Ambanganga is at its lowest state; but when the river rises, it is much wider and deeper, and formerly was still more so.

The end of this canal, from about four or five miles from its commencement, is twenty-five to thirty feet below the banks, and the earth which has been taken from the canal is conspicuous in large mounds close to it. It is the superstitious opinion of the inhabitants in the neighbourhood, that it was cut by people of

forty feet stature, at the time the Minnery, Kandelly, and other tanks were formed, and that it was so deep, an elephant could not ford it:—in fact, it does appear to have been five to fifteen feet deep, and forty to one hundred feet wide. The jungle has grown in the bed, but not very thick, and might easily be cleared to enable a person to inspect it. It runs into Kondrawawe tank, crossing in its way six rivers, which formerly were dammed across, and their streams directed into the canal. Water at present only runs in this canal from the Ambanganga, till it crosses the Kongatoo Oya (three-quarters of a mile from Ellaharah); here the dam that was formed across this river having broke, the water of the canal returns to the Ambanganga, and runs strong down in that direction.

About three hundred yards from the Ambanganga, a basin has been cut three to four hundred yards in circumference, said to have been excavated when the canal was made; and it no doubt was originally a harbour for boats passing up and down. The basin is filled with slimy mud, and would require little trouble to clear.

Kondrawawe tank is about fifteen miles from Ellaharah, half-way between that place and Minnery tank. It has a mound of earth on one side, but no sluices, and is about two miles in circumference. The canal beforementioned runs from Ellaharah into this tank, from which two others issue—the first to Minnery to fill the tanks in that direction; the second to Guretille tank, and others in that line for the same purpose.

Minnery tank has a stone mound with two sluices, through which the country, as far as about Soungervilla, is supplied with water, conducted by a canal which is that which falls into the Peercatory canal, one mile from Soungervilla. The inhabitants of this part of the country are entirely dependent, with respect to the cultivation of their fields, upon Minnery tank, and as it is only at present supplied with rain water, they frequently suffer (from droughts) a failure, more or less, in a crop. They obtain but one a year; formerly when the tanks were constantly supplied with water from the Ambanganga, the country was cultivated at pleasure.

Kowdella tank is six miles to the northward of Minnery tank, and is the largest in this part of the country, being as extensive as Minnery and Kandelly tanks together. The high road passes over the mound of this tank, which is built alternately of stone and sand. It has three sluices through the mound, along which the water formerly flowed, and joined the stream from the Minnery sluices. Minnery and Kandellah tanks are united by a canal clear of their mounds, so that when the Ambanganga water filled Minnery tank, it ran to Kowdellah and so passed on to Kandelly

tank, filling three intermediate tanks, viz., those of Pooleankadewatta, Addikore, and Permamadua.

Kandelly tank is small compared with what it originally was. The inside of the principal mound is about a mile and a half long. The stones are simply laid in layers, one over the other, giving it the appearance of a flight of steps in a line perfectly straight—there is not the least appearance of masonry or mechanical art in the formation of this mound (except the sluices). The stones are about the size that two men would carry, taken from the neighbouring hills, which are of themselves piles of loose stones. Kandelly tank rises during the rains from its lowest state ten or twelve feet at the mound, and issues through two sluices running to Tamblegam lake. The country about Tamblegam can be completely inundated by water from this tank, though there may not have been a shower of rain for several weeks, thus showing the great importance of such reservoirs. A canal enters Kandelly tank from Kowdellah, and the wannyar of Minnery confidently asserts, that canoes and boats formerly went between Kandelly and Ellaharah in that direction, and that it was the general opinion that these tanks were formerly kept full with water from the Ambanganga, a communication which could again be opened with little expense, as masonry would not be required.

These large tanks, numerous small ones, with ruins of fallen wharfs, remains of deserted villages, and other remnants of antiquity, prove that the vast wilderness of beautiful and valuable forest trees, through which which the new line of road passes, heretofore supposed a trackless desert, obnoxious to the existence of man, and destitute of water and inhabitants, once contained a considerable population, by whose labours an extensive tract of irrigated lands was regularly cultivated.

III.—*Reports on the Navigation of the Euphrates.—By Captain Chesney, R.A.* By George Long, Esq.

While new parts of the world are daily becoming better known through European enterprise, many most interesting portions of the ancient world seem likely to be forgotten or neglected, though, both for their physical character and the historical recollections attached to them, they furnish materials as ample for the inquirer into natural phenomena, and infinitely more abundant for him who studies the history of man, and the revolutions of political societies.

The object of Captain Chesney's memoir is to show the practicability of a communication with India by means of the Euphrates. With this view he has minutely examined the river between Anna

and Babylon, and for the rest of the course between Bir and Bussora has collected information for the purpose of enabling those interested to judge of the propriety of establishing this line of communication. Our object is merely to select those facts from the report, which may help to give a more correct idea of this noble river below Bir, and to compare the description of Captain Chesney occasionally with the voyage of Rauwolf* down the Euphrates, with Niebuhr, the Itinerary of Isidore of Charax, &c. The point on the Euphrates which Captain Chesney proposes as the station of the steam-boats is Bir, on the left bank of that river. The position of this town has been already well known from the description of previous travellers; it is fixed at about 36° 59′ N. lat., 38° 7′ E. long. From Bir to Bussora, following the windings of the river, the distance is calculated by Captain Chesney at 1143 miles—

		Miles.
From Bir to Anna, calculated on the descent of boats	.	$313\frac{2}{5}$
From Anna to Hilla (per maps 2, 3, 4)	.	440
From Hilla to Bussorah, by detailed calculations .	.	$389\frac{3}{5}$
		1143

Bir, which lies on the road between Aleppo, Orfa, and Diarbekr, contains from eighteen hundred to two thousand houses, and is three and a half days from Aleppo by caravan. The inhabitants are Turks, who also extend five or six hours down the stream, and are described as a peaceable people. The country about Bir furnishes abundance of provisions; Rauwolf says that, in his time, the hills near Bir supplied many goats and sheep for the consumption of Aleppo. The Arab tribes commence about fourteen hours from Bir, where there are some ruins called Billha on the left bank. About eight hours below Bir, on the right bank, are the ruins of Salamia.

The banks of the Euphrates are in parts still well peopled, though the population is far less than it would be if agriculture could be more generally diffused and security of property established. Independent of what we know from historical records of the numerous towns that lined the banks of the Euphrates, the existing remains attest the same fact. As the interest attached to the Euphrates is peculiarly one of an historical character, we shall notice all the ancient sites that Captain Chesney has mentioned in his memoir. At twenty-eight hours below Bir, and a little distance from the left bank, is Seluk, a ruin; and opposite, on the right

* Leonharti Rauwolfen der Artzneĭ Doctorn, &c. Aigentliche Beschreibung der Raisse. 1582, 1583. There is a translation of Rauwolf in "A Collection of Curious Travels, &c." by John Ray. London, 1693. The translation is not by Ray; sometimes it is slightly inaccurate.

bank, the ruins of Auz. The Beni Said Arabs extend from Seluk to Giabar. Thirty-five hours below Bir, on the left bank, is the castle of Giabar, (the Iabar of Rauwolf,) and a town of about a thousand houses and tents. There is an abundant source of bitumen near Giabar. These are the first houses observed between Bir and this place. The river from Bir to Giabar is rather sluggish, running over a sandy or pebbly bed.

Rauwolf's voyage (commenced August 30, A.D. 1574) does not enable us to estimate the distance from Bir to Giabar, as no hours are given, and owing to running aground on a sand-bank he lost several days. After leaving Bir, he remarked, a short distance below that town, the commencement of the desert on the west side; farther on, both sides of the river were lined with brushwood, in which wild animals, and particularly wild boars, were both heard and seen. The Arabs were very troublesome. For two days nothing but desert on both sides, with a great deal of low wood, plenty of wild boars, and Arab huts full of children. Rauwolf's voyage from Bir to Giabar in a loaded boat (in September) fully confirms Captain Chesney's opinion (note, p. 8) of there being no serious obstruction between these two places. The general course of the Euphrates from Bir to a place called Cala (castle) by Rauwolf is south, but very tortuous. Cala he places two days journey from Aleppo, which, as Major Rennell remarks, must be long ones. Giabar is placed by Captain Chesney from three and a half to four and a half days from Aleppo by caravan, and only two days for a horseman. From about Cala we conjecture that the eastern bend commences, and the river here makes a great elbow. With such data as we possess, an accurate delineation of its course is impossible, but this great elbow, which some have doubted about, certainly exists. The castle of Giabar is ascribed by Captain Chesney to Alexander the Great, but this is a mistake; Rauwolf compares its towers, which then existed, to those of Aleppo.

A little above and also below Giabar, Captain Chesney states that the Arabs have a bad character, which it seems they had in Rauwolf's time, who adds, it is no wonder they were so troublesome, for they had nothing to eat; he describes some of them as coal-black, and as naked as they were born. They were unacquainted with fire-arms, but no doubt they are possessed of them now, and may be found a little more dangerous visiters to the voyager than they were two centuries and a half ago. It appears, indeed, from a comparison of Rauwolf's narrative with Captain Chesney's, that the obstacles to the navigation of this river from the inhabitants are greater now than they were in 1574.

From Giabar to Racca is eight hours. Racca, the Nicephorium of Isidore, has only about thirty houses; it stands on the left bank near the junction of the Belich, or Belejich, with the

Euphrates. This little river has retained its ancient name of Bilecha. The Itinerary of Isidore commences at Zeumag (near Bir) on the Euphrates, and runs in a tolerably direct line to Nicephorium, avoiding the great bend of the river.

"Below the Belejick, and a little more than *two* hours from Giabar, the first obstruction below Bir is met with." (Captain Chesney, p. 8.) There is some mistake here; Racca, at the mouth of the Belejick, is *eight* hours below Giabar.* Between the mouth of the Belich and the island of Der (supposed to be the ancient Thapsacus) there are several obstructions in the river, and also several camels' fords: islands in the river, often covered with wood, are common both above and below Der. None of the fords appear to have less than three feet water in the dry season. Opposite Der, on the right bank, is the town, which contains about fifteen hundred houses. *One* hour below Der, which is on the right bank, is a camel's ford with four feet water. Supposing Der to be the Thapsacus of Xenophon, where the army of the younger Cyrus crossed, it is possible that the depth of water may be generally more than four feet. When the Greek army passed in the dry season, it was not more than breast deep, which however was considered by the natives as an uncommon occurrence. Der is eight days caravan journey from Aleppo; it was eight days march for the army of Cyrus from the Chalus, (the river of Haleb or Aleppo) to Thapsacus. Three days below Der is the rocky passage of Is Geria, (about 35° N. lat. below the junction of the Khabour,) where Captain Chesney's personal observations commence; his information on the points above Is Geria being mainly derived from a native boatman of Anna. At this place a ledge of rocks, extending a hundred and fifty yards along the river, crosses its entire bed, with the exception of a passage sixteen or seventeen feet wide, where there is from two to two and a half feet water at the dry season. Numerous other ledges of rocks are found as far as Anna; and, indeed, in all the distance between Racca and Anna (about a hundred and seventy miles) the bed of the Euphrates is very rocky. The least depth over the rocks is two feet, or twenty-two inches; the ordinary depth of the river, where there are no rocks and shoals, is from six to nine feet.

At Racca, Rauwolf describes the old town, which was on the heights, as exhibiting a wall, arches, and pillars. Greek remains might possibly still be found here. Below Racca he describes the country as a desert for several days; the deserts were succeeded by high bare hills without a stick upon them. On the fourth day from Racca the mountains ended, and Rauwolf observed here a

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* We cannot reconcile Captain Chesney's map and his description in this instance, nor do we understand the description of the river between Giabar and Der.

strong fort of a triangular form called Seleby, built on a hill, with two walls running down to the right bank of the river. Six miles lower another fort of the same name appeared on a very high bank. A little above Der he describes the river as dividing into several branches; Rauwolf, who was a botanist, noted a willow tree in this neighbourhood of a peculiar character, called in Arabic *garab*. The country about Der is tolerably fertile, and produces plenty of corn, millet, cotton, &c. The islands produce garden vegetables, such as cucumbers, melons, cauliflowers; the date, the lemon, and the citron also grow there. Captain Chesney, on the authority of his informant, marks it as a place where supplies of meat, rice, eggs, &c. could be procured; and he adds, "It would also be a safe halting place." Rauwolf's character of the people is favourable. He found the water at Der low in October, and full of mud. The fertile character of the country about Der tends to confirm the opinion of its being an ancient ford, on a line of route, and probably the ancient Thapsacus. The Chabour, which Rauwolf calls the Chabu, joins the Euphrates below Der, and above the town of Rachaby, the Rahabat of Captain Chesney, who places it three hours below Der, and in his map above the junction of the Chabour. If we may trust Rauwolf, Captain Chesney's information here is not correct*. Rachaby (the town) lies on the right bank, about two miles from the river, in a fruitful plain. From Der to Schara, where Rauwolf paid the usual customs, was three days sail; about Schara (October 7) there were many bushes; but here began that formidable desert which the army of Cyrus passed through, and the Greek so faithfully describes. The picture given of it by Rauwolf is no less striking, and is a good specimen of his rough old German—"Von Schara gieng unser fart etliche mehr tag nach einander wol uund glücklich fort, aber maistthails durch sandechte wüstinen auss, die so gross als wir je zuvor gehabt haben: wie sich dann die zü zeiten so weit erstreckten das wir kein ende daran möchten ersehen: welliche auch so dürr waren, das darinnen nicht bald weder äcker noch wisen, stöck noch stauden, laub noch gras, weg noch steg, zuersehen noch zufinden. Desshalben dann dise wol mögen für die wüstinen gehalten werden, welliche man gemainlich das sandig Möhr genennet."

In this wilderness, Rauwolf saw nothing remarkable but some ancient turrets on the high banks, at a point called Ersy, "where, as some say, hath been formerly a famous town." And here, he says, (p. 188) "the river takes so great a sweep, with numerous windings, that we were more than half a day getting through them." The resemblance of name between the Ersy of Rauwolf

* There are difficulties about Rahabat. See Rennell on the Comparative Geography of Western Asia, i., p. 42, &c.

and the Corsote of Xenophon would lead us to consider them as the same place. Corsote, it is true, is placed by Xenophon on the Mascas (the Saocoras of Ptolemy), which enters the Euphrates on the east bank; and "Corsote (Xenophon, Anab., i., 5) was surrounded by the Mascas." The narrative of the Greek historian leads us to suppose, that Corsote was near the junction of the two rivers. But neither Rauwolf nor Captain Chesney mentions this small affluent of the Frat. The difficulty of identifying ancient and modern positions on the Euphrates is very great, for the land route did not follow the river as many suppose, but stretched across from one elbow to another, contriving to hit the fertile spots that are occasionally found near the river. Any attempt at fixing positions from the parasangs of Xenophon, the schæni of Isidore, and the latitudes and longitudes of Ptolemy, will be fallacious.

Rauwolf speaks of the frost and dew (10th and 11th October), just before reaching Annah, as being considerable. We have purposely made our extracts from this excellent old traveller somewhat longer, as far as this point, because Captain Chesney's own personal observations commence at no very great distance above Annah. This town is on the right bank, at a bend of the river to the N. E., with a string of cultivated islands opposite to it. The place is pretty well known from the accounts of former visiters. Captain Chesney states the number of houses at about eighteen hundred. It consists of one long, narrow, winding street, running along the contracted space between the high grounds and the river; and contains two mosques. The high, bare hills rise abruptly from the left bank, along which is the boat's passage as far as the principal island, opposite which the town terminates. This island is the Anatho of Isidore; and is covered with ruins, which also extend eastward for two miles farther along the left bank. "The chief objects of interest," Captain Chesney remarks, "are the remains of four ancient castles, one of them on the great island; also a beautiful arabesque minaret, about eighty feet high."

Annah is a place that can afford sufficient supplies (Captain Chesney). Rauwolf, who seems to have had a better opportunity of examining the soil and productions in the neighbourhood of this place than any subsequent traveller, enumerates, among its productions, the olive, orange, citron, lemon, pomegranate, and the date, of which he saw two new sorts, quite red and yellow. Cotton and corn were growing: he says, the corn was just ready to cut (Oct. 12); which for the latitude of Annah appears rather late*.

"Seven or eight miles below Annah, at the turning of the river, the site of the ancient Tilbus opens to view" (Captain Chesney). There is no ancient Tilbus; but Captain Chesney probably alludes

* Captain Chesney (p. 5) places the harvest in May. Possibly there may be two harvests in the year.

to the island Olabus of Isidore, where was the "treasury of the Parthians." But the distance of twelve schœni (perhaps about twelve farsangs) from Annah will not agree; besides, Captain Chesney does not give the modern name, unless we are to understand that Tilbus is the modern name also. The place may possibly correspond to the Thilutha of Ammianus (lib. xxiv., cap. 2). Below Annah, we find Hadisa or Haditha (about 34° 10′ N. lat.), which retains its ancient name, and exhibits an "ancient stone wall, still in a good state, serving as a rampart, flanked by semicircular towers, and joining the extremities of the old castle, which stands at the western extremity of the island; with the remains, near it, of a stone bridge, which once communicated from the left bank to the right, through the island and town." The hills here rise from both banks of the river. Below Haditha, the bed of the river is rocky; and the rapids of Hudder el Elias have, near their extremity, a fall of two feet in fifty or seventy. A short distance below the rapids is the island of El Oos; about a mile long, with five hundred houses covering all the island, and two mosques. The margin of the island is faced with an ancient stone wall, showing that it is an old town, and it might be Olabus, except that the distance of Isidore, as given between Annah and Hit, two well-known positions, are entirely at variance with this supposition*. The Ozo-Gardana of Ammianus bears sufficient resemblance in name to El Oos, but we do not venture to reckon the distances of Ammianus. "The hills opposite the town, on both banks, run to a considerable height, brown and bare, but very bold in the outline." Sixteen miles below El Oos, the Wady Haran, the bed of a wintery torrent, enters the river on the right bank; and three miles lower is the picturesque island of Jibba, more than two miles long; its town contains five hundred houses, some mills, and aqueducts, with numerous date gardens interspersed; the whole backed by a bold outline of irregular hills on both sides, but especially on the left bank. Jibba can furnish dates, meat, rice, &c. (Captain Chesney): of fruits, Rauwolf mentions the date, almond, and fig. About five miles below Jibba, "a ledge of rocks, about ten feet wide, crosses the river, leaving a passage in the centre of fifteen feet wide, and ten or eleven in extent, with three and four feet of water:" this is the last impediment which the boatmen of the river consider of any importance. Near Gasar Sadi, a short distance before we come to Hit, "one of the ancient parapet walls causes a fall of nearly one foot, when the river is low; but there is a depth of six and a half feet in the centre." In this neighbourhood, on the left bank, there is "quite a river of bitumen." Before arriving at Hit, there

* El Oos is the Eluco of Rennell's map, and he makes it the representative of Olabus. He makes Ozogardana identical with Is or Hit.

are two more falls, one of only a few inches. Hit, the Is of Herodotus and the Aeipolis of Isidore, is easily identified; it is generally placed about 33° 43′ N. lat., 42° 27′ E. long. The sources of bitumen here seem as permanent as a source of water, for we know that they produced this substance in great abundance at the time when old Babylon was built. "Hit contains about fifteen hundred houses, built all around an elongated hill, rising from and parallel to the right bank of the river. The houses are chiefly of clay, one or two stories high, flat-roofed, and many of them covered or repaired on top with bitumen; the streets are narrow, dirty, and frequently steep, rising one above the other along the side of the hill; with a dusty, black appearance, owing to the smoke from the constantly boiling bitumen. The hill and town are inclosed by a high mud wall, with semicircular towers, but no ditch. One graceful minaret appears amidst this mass of brown clay; and some respectable specimens of arabesque architecture are displayed in some of the saints' tombs a little way outside the town, where the scenery is that of brown, barren hills, and a desert country. Little or no grain is cultivated near Hit; the inhabitants prepare a good deal of wool, but their chief occupation is in boat-building, burning lime, making salt, and preparing bitumen, nafti, &c.; great quantities of each being sent to Hilla, Bagdad, Bussora, and other places; the nafti finding its way even to India."

Ten miles below Hit, there is a source of naphtha at Nefata, on the left bank. Here the hills cease nearly altogether; the bed of the river is sandy or muddy, the stream more sluggish; and the irrigation, instead of being effected by aqueducts, as in the rocky portion of the river, is managed by bullock-mills.

It appears that the Euphrates is lined on each side by hills for some distance above Annah and a little below Hit; and the bed of the river is rocky from below Racca to Annah, and indeed somewhat lower. We know nothing of the absolute elevation of the high land on each side of the Euphrates; but we conjecture that the descent from the hills, on the east side into the desert, is comparatively small, and that a large part of the upper Jezirah is a flat, with some moderate elevation above the river. Hills line the left bank of the Tigris, also, above Tekrit towards Mosul. We have the authority of Xenophon, if any is wanted, for the country south of the Khabour being as flat as the sea; the army, even after crossing the Mascas (the Wady al Seba), was still in the desert, and their route was occasionally over uneven ground, being near the Euphrates. Xenophon says, that the inhabitants in some places cut mill-stones near the river, which they carried down to Babylon. The town Charmande (Anab. i., 5, 10) is only so far fixed by Xenophon, that we know it to have been on the west

bank, and within the ninety marches through the desert country. In Captain Chesney's map, there is marked between Annah and Hit, and nearer the latter, "Girband Rocks and Island." Girband and Charmande are, in fact, the same name; and as the islands in the river are generally fertile, the town of Xenophon, to which the soldiers crossed on their tent-skins stuffed with dry grass, may possibly be represented by the island of Girband. The hills that line the river, we conjecture to be calcareous: the rocks in the river must generally be the edges of the strata. Tavernier mentions chalk near Annah, and Captain Chesney speaks of marble quarries in the mountains.

Though Babylon was built of brick, considerable quantities of stone were also employed for various purposes; and there can be no doubt that a minute examination of this hilly region would bring to light the old Babylonian quarries, probably a little above Hit.

Above Hit Captain Chesney found numerous remains of ancient aqueducts for irrigating the country, some of which are still used both for that purpose and for grinding corn. These aqueducts, as he describes them, are of stone, well cemented, and narrowed to two feet or twenty inches at top. They run into the stream at right angles, and rest on pointed arches; when it was required to convey them far inland (some run as much as one thousand two hundred yards) a double series of arches was used, resting one on the other; the stone-work between the upper arches rests on the key-stones of the lower arches; the arches, after running some little distance into the river, take a turn parallel to the stream; at the end of this turn, water-wheels are placed, about thirty-three feet in diameter. On the exterior circumference of the wheels earthen vessels, three or four inches in diameter and twenty inches long, are fixed at intervals of eighteen inches, with their mouths of course in the direction of the stream. The earthen vessels are generally found to offer resistance enough to the current to turn the wheels, but in some cases six or eight fans of palm branches are fixed to the sides of the circumference. The wheels are moveable, and can be raised so as to work equally well at various heights of the river. Captain Chesney observed that there are generally above each aqueduct the remains of a *bund*, or stone rampart, carried across the river, with the exception of an opening left for boats. These bunds are now frequently nothing "but a bank of stones disturbing the evenness of the current, but always affording a sufficient passage for large boats at low seasons." The object of them was simply to create a head of water. Rauwolf's description is worth quoting. Speaking of the navigation below Annah, he says,—

"But our master was very much troubled because the river was often stopped up at the sides with great stones that made the river

swell, for there was a great number of large and high water-engines or wheels, and these stones were said to lead the stream to them, to make them work, for it often happened that two of them stood close together, which took up so much of the river that we had hardly room to pass by them in the middle of the stream, wherefore he was forced to have great care, to find the right way where he might pass without danger. The reason why these water-wheels are so much in use is, because this river doth not overflow (as the river Nilus) to water the grounds, neither doth it rain enough here sufficiently to moisten the seeds and garden plants, that they may not be burnt by the great heat of the sun; wherefore they must look out for such means as will supply this want. To do this they erect water-wheels (whereof three or four stand behind one another) in the river, which go night and day, and dip up water out of the river, which is emptied into peculiar channels, that are prepared on purpose, to water all the ground. But if the places lie not conveniently, or the shore be too high to erect such wheels, they make instead of them bridges and peculiar engines, that are turned by a couple of bullocks, to bring the water up, with great leathern buckets, which are wide at top and narrow at bottom."—(p. 170. English translation.)

From a few miles below Hit to Hillah, near the site of Babylon, the country is generally flat; the bed of the river is sand or mud, the current deeper and slower; the banks of the river have few trees and little brushwood, and are generally either perpendicular or rise in steps. Numerous Bedouin tents, made of goat's hair mixed with wool, are seen along the river, and flocks of goats, sheep, and cattle feeding near them, and "beautiful mares clothed and piqueted close to the tents, their masters strolling about armed." The water for irrigation is here raised by bullocks, who traverse up and down an inclined plane, placed at right angles to the river, and sloping from it. A rope is attached to the bullock, and goes over a roller: at the end of the rope is a leathern bucket, which descends to the water as the bullock goes up the plane, and rises again to the roller, when it discharges itself into a vessel coated with bitumen, as the animal descends the plane and arrives at the bottom of it.

The castle of Felujiah, on the left bank, (between Hit and Hillah,) is one hundred and forty miles from Hit, but not near the site of Perisaboras, as Captain Chesney assumes it to be. Here is a bridge of boats, one of which, in the centre, is kept moveable, for the sake of allowing a passage for craft going up or down. Felujiah is close to the old Isa canal, and was taken by Rauwolf for the site of Babylon; other old travellers used to place this famous city at Bagdad. Rauwolf speaks of the remains of a bridge near Felujiah, the arches of which were constructed of burnt bricks; though he says the river is half a mile (German?) wide, he is credulous enough to believe that these arches once

stretched across the river: they were evidently the remains of an aqueduct. Seventy miles below Felujiah is Musseib, where there is also a bridge of boats one hundred and sixty yards long. It contains a 'new and handsome castellated caravansara on the right bank.' Macdam, about half way between Felujiah and Musseib, on the left bank, is, according to Captain Chesney, only nineteen miles from Bagdad. As the position of Bagdad is known, the course of the Euphrates may be here brought a little nearer than in our maps. Felujiah also is stated at not more than twenty-four or twenty-six miles from Bagdad, which is less than the maps generally give. The river is deeper between Felujiah and Musseib, and continues so all the way to Hilla, where it grows narrower and still deeper; 'the bridge of Hilla is four hundred and fifty feet long, with eighteen feet depth of water in the lowest season.' Niebuhr gives it a breadth of about four hundred German feet, or Danish perhaps. 'The bridge is a floating one, with a moveable boat in the centre.'—(Captain Chesney.) About two thirds of Hilla is on the right bank; the population about ten thousand, which is very small compared with the ground which it occupies. 'The bazaars are good, and well supplied with meat, fish, rice, and even luxuries; the city is regularly governed, in general quiet, peaceable, and particularly well disposed towards strangers and Franks. Small vessels lie below the bridge usually; and the ancient round boat, formed of reeds or oziers, *coated* with bitumen, about ten feet in diameter, and worked with one paddle, is still to be seen plying in the neighbourhood of the town, just as it is described in Herodotus, and seems to be well adapted for ferrying across the strong current, without losing much distance.' The passage of Herodotus referred to is (i. 194) where he is speaking of the *Armenian* boats which carried down commodities to Babylon. They were of a circular form, but made of ribs of willow, covered with skins and stuffed with dry sedge, but no bitumen was used; they were worked by two men,* each with a paddle.

Below Hilla, we find nothing but a flat country, with the derivations or cuts from the river, still more numerous than above ancient Babylon. The Pallacopas, during the time of the ancient Babylonian culture, commencing above the town of Babylon, carried off, during the season of the rise, a great quantity of superfluous water into the flats west of Babylon. But there seems good reason for believing that part of the waters of the Euphrates once entered the Persian Gulf by the Khore Abdallah, as the dry bed of a stream is said to run parallel to the Shab el Arab and the Euphrates, as far at least as the neighbourhood of Kufa. Niebuhr (II. p. 223, Copenhagen edition) saw the dry bed of this canal, as

* Boats propelled by two men, each having a paddle, are used in the part of the river at the marshes of Lemlun.—(Captain Chesney.)

he calls it, at Old Basra. He considers its origin to be at Hit, from whence it ran to Kufa, and from Kufa past Old Basra (Zobeier) into the Gulf, by the Khore Abdallah. If this is really altogether artificial work, it is one of the greatest monuments of Babylonian civilization, and one which has seldom been surpassed. It well deserves a more minute examination. By means of this great channel, and the numerous cuts from the Euphrates, the country between Hit and Basra must once have been the most productive spot in the world; and nothing now is wanted but a settled government and a better population, to fill the arid plains of Chaldæa with fertility and happiness. But the present government of this wretched country can effect nothing; the impulse of civilization must come from a foreign force, as civilization always has come. The banks of the Pallacopas were planted with trees, and the lands around were fertilized with the waters of the river, till the Mohammedan dominion turned a fertile plain into a waste. The lion, the tiger, and the jackal abound in the deserts.—(Niebuhr.) The ground, in some parts along the lower course of the river, is strongly impregnated with salt.

The nature of the river and the adjacent country between Basra and Hilla are well described by Niebuhr, to whom we are indebted for the observations of latitude at Basra, Mansurié, Ardsje (the limits of tide water, and between one hundred and twelve and one hundred and twenty geographical miles from the Persian Gulf), Graim (the Grahim of Captain Chesney), Lemlun, Hilla, and some few other places. On these observations, and the map of Niebuhr, our present delineation of the river above Basra, and as far as Hilla, mainly rest. Captain Chesney has added numerous villages and names on both sides of the river, but no astronomical observations. Niebuhr's map, however, does not attempt more than to fix the position of the chief places (such as we have mentioned) and to connect them pretty nearly by straight lines.

Basra is in 30° 30′ N. lat., Hilla in 32° 28′, which gives a difference of 1° 58′ of latitude. The longitude of Basra is given at 47° 33′, and that of Hilla perhaps about 44° 10′, leaving a difference of 3° 23′ in longitude. The computed distance between the two places is given by Captain Chesney at three hundred and eighty-nine miles three-fifths. As, then, there appears to be no very long bend in the river between Basra and Hilla, if we except, perhaps, the elbow at Korna, it will appear that the course of the river must be exceedingly tortuous, as we know it in fact to be, and as it is represented in Major Rennell's map. The extensive swamps of Lemlun show the flatness of the country and the slowness of the river in this part. Between Ardsje and Semave, in the month of December, Niebuhr found so little water that the boat was often aground; this shallow part is below the Lemlun

marshes. Captain Chesney places the last impediment at Kalat Geran, where there is a narrow bank of pebbles across the river, with three and a half or four feet water at the low season: 'this is the last shallow spot in the Euphrates; which, during the rest of its course to the sea, is deep, wide, and perfectly free from obstructions.' Kalat Geran appears, from Captain Chesney, to be a little above Graim or Grahim; and therefore Niebuhr's statement and his, as will appear from comparing the maps, do not entirely agree as to this part of the river.

Between Hilla and Bir no position is fixed astronomically, though the sites of Hit, Annah, Der, Racca, and some other places, are determined by various routes with tolerable precision. The reader who wishes to examine the authorities for these positions may refer to Major Rennell's Geography of Western Asia.

We are enabled, by Captain Chesney's examination of this great river, to add something to our previous knowledge, and to obtain a more precise notion of its length measured along its windings. If to the 1143 miles between Basra and Bir we add 600 more, following the river to its source along the Morad, this will make 1743; nor do we think the calculation in excess. The distance from Basra to the Gulf will increase the whole to about 1800 miles, in round numbers.

IV.—*Physico-Geographical Essays.* Essay I.—*Observations on Lakes;* being an Attempt to explain the Laws of Nature regarding them, the causes of their formation and diminution, the different phenomena which they exhibit, &c. By Colonel J. R. Jackson. 4to. 88 pp. Bellizard and Co., St. Petersburgh; Bossange, London.

THIS work is the first of a Series of Essays on Physical Geography, promised by a member of the Royal Geographical Society residing at St. Petersburgh. A second, and in some degree supplementary communication, from the same quarter, ("On the Seiches of Lakes,") will be found in another part of this volume: and the following extract from the letter which accompanied that, proves that the author is indefatigable in prosecuting similar researches.

"The older inhabitants of St. Petersburgh observe now a remarkable change in the temperature of their climate,—the examples of excessive and long-continued cold being now of rare occurrence. This must, however, be understood relatively, for what is here deemed mild weather, would be regarded as most severe in England, and the river constantly freezes to a great thick-

ness with extreme rapidity. It is my intention, should nothing prevent, to make a course of observations, this winter, on the progress of the formation of the ice, and the temperature of the water under it at different depths: also, to endeavour to ascertain the cause of the singular porosity of the last ice which floats down from the Ladoga, and which seems entirely composed of short vertical rods or cylinders, easily separated."

The object of the volume immediately before us is expressed in its title:—it is to collect into one view the principal facts regarding lakes, whence to deduce the laws or circumstances by which their formation, increase, or diminution may seem to be regulated. In pursuing this investigation, Colonel Jackson arranges his materials under the following heads:—*Introduction*—*of Lakes in general*—*of Lakes without Outlet*—*Decrease in the Quantity of Water in Lakes*—*Climate of Basins*—*of the Affluents of Lakes*—*of Lakes having an Issue for their Waters*—*of the Temperature of Lakes*—*Colour and Transparency of Lakes*—*Quality of the Water of Lakes*—*of Salt Lakes*—*remarkable Phenomena of Lakes*—*of the Lakes in the Craters of extinct Volcanos*;—concluding as follows:—

"From what has been said regarding lakes, it will be evident:

"1st, That a greater variety of objects are to be considered in connexion with them, than might have been at first apprehended; and

"2dly, That although some of these objects may at first sight appear trifling, they are in fact all of importance, throwing light mutually upon each other; and that, consequently, nothing satisfactory can be asserted of lakes, without taking everything into consideration; they being a complicated problem, for the solution of which it is necessary to state many equations, whose terms always modify, and sometimes wholly cancel each other.

"Notwithstanding which, it is probable that some of those who consider the subject solely with a view to practical utility, may regard many observations as superfluous, which the man of science will deem, and not without reason, of peculiar interest.

"It is our wish, that lakes be considered and attentively examined under every point of view; not only in order that they may themselves be thoroughly understood, but because many of the facts connected with them have a direct, though collateral, influence upon other objects of physical geography, a science comparatively new.

"Some, I doubt not, of my readers will say, I have managed to make lakes a very dry subject, while in fact my object is to prevent their desiccation. Had I proposed to myself to speak of lakes as exhibiting some of the most engaging and picturesque scenes, with which the surface of our globe is decorated, my task would undoubtedly have been more pleasing to the many, and more easy to myself. But as I never knew a rose or lily to be less prized by

those who knew the secrets of vegetation, than by those who knew nothing of the matter; or a butterfly less admired, because its history was known: so, on the contrary, I have ever found our admiration to be increased for the objects of creation, in proportion as we become initiated into their mysteries. I am therefore persuaded, that he, who, skimming over the surface of the Lavian lake, is lost in ectasy, while his ravished sight wanders over the varying beauties of the surrounding scene, is so far from having any portion of his delight diminished by a scientific knowledge of all the circumstances connected with the subject, that he feels it thereby greatly enhanced. If lakes charm us by their beauty, and interest us by their utility, they call forth our gratitude to the Source of all beauty, the Giver of every benefit; and when we contemplate those admirable laws of nature, by which that beauty and those benefits are secured to us, we are elated with wonder and adoration.

"Whether lakes present the gloomy aspect of Averno, the heart-enlivening scenes of Verbanus with its enchanted islands, or a dreary waste of flat and shrubless shores, these reservoirs are alike useful and important in the system of the earth. Rains do not always fall, and but for reservoirs, rivers, those arteries which preserve the life of the world, would have but a transient and occasional circulation. But all rivers are provided with reservoirs or lakes; many it is true are hidden in the bosom of the mountains, but many more are at the surface of the earth: thus most rivers take their rise in lakes, nor is this their only use. Extent of surface is necessary to evaporation, and thus water is spread into sheets to rise in embryo clouds, around which collect the floating vapours dispersed in air—to form a screen from the sun's too-parching rays—to dissolve in showers and irrigate the land—and to replenish the exhausted sources of running waters. Such services, rendered to us by means of lakes, would be alone sufficient to excite our interest, but other benefits yet accrue from them.

"Some are of great extent, they are inland seas, on which are wafted from far distant points the various productions of different soils, the different produce of various industry: nay more, they themselves teem with riches. Their fisheries are important; their salts, of extensive utility. Such then are lakes; and such, but from extraneous causes, they would remain.

"We have seen, however, that lakes are perpetually diminishing; some are already dried up. To delay therefore an event which for many countries would prove a dreadful calamity, is surely an object worthy of serious consideration. It might be thought, that no human ingenuity can prevent the desiccation of lakes. But we make bold to assert, that, upon an attentive consideration of the facts contained in this essay, useful hints may be derived for the means to be employed.

"Thus, whatever tends to dry up sources, to loosen the soil of mountains, to increase evaporation, to enlarge outlets, &c., tends directly to the prompt desiccation of lakes; and hence all means,

which may be devised for preventing these tendencies, favour their reverse, and act as preservatives to lakes.

"Nor should it be falsely imagined, that, as the operation is slow, its final result is too distant to be worthy of our regard. The operation is slow, it is true, but not so slow as may be imagined. We have shown in this essay, that a constantly similar extent of surface is no sign of a constantly equal quantity of water; the surface remains the same, but the depth diminishes; hence the danger is not apparent. Let lakes be but regularly sounded every ten years, in all their parts, and then perhaps many provinces, now happy, and now secure of the perpetual enjoyment of their present blessings, will have just cause for alarm. A few generations may convert the now beautiful Lake of Geneva into a pestilential swamp, or dwindle it down to a capricious torrent river. Lake Erie itself, the boast of the United States, has already worn back its outlet at the falls, seven miles! twice as many more, and it will fall to the level of Lake Ontario. To effect this, the work of many centuries will be perhaps requisite; and even then the lake may remain of great extent and of long duration, as the waters it receives by its principal affluent are purified by deposition in the higher lakes.

"These lakes are seas of fresh water, and the world itself may be changed ere they dry up. It is not, therefore, to such immense bodies of water that our observations are directed; they are beyond our control,—for what barrier of human fabric could resist, when mountains wear away? But smaller lakes may be managed; and when it is remembered, that canals, in many cases, with all their advantages, are indebted to lakes for their existence, it becomes doubly important to take into consideration every circumstance which may affect them.

"In like manner, we trust, that from what we have said concerning salt lakes, the intelligent will be able to devise means by which the advantages of such lakes may be secured or increased, and their products varied. For instance, in the case of a lake, the waters of which are too little impregnated with salt to be worth the expense of evaporation, on account of the small quantity of salt derived from the subaqueous springs, and of the large quantity of water discharged through the outlet, the reservoir may be made the source of considerable wealth, by damming up the lake, and thus increasing the surface exposed to evaporation, while the salt is prevented from escaping.

"Again, should natron be required, and that substance be proved to be the produce of a spontaneous decomposition of the muriate of soda by the carbonate of lime, it may in some eases be obtained by a canal, which shall drain off the water of the lake into natural or artificial hollows in a calcareous soil, &c.

"Lastly, as we before observed, the different circumstances which are connected with lakes, are also linked with other objects, whence much light may be thrown upon these by observing those: and even should no other benefit result, which is however far from being the

case, it is in our opinion a sufficient incentive to research, to learn the several laws by which nature operates the various changes necessary to the harmony of her existence.

"We shall therefore conclude by recommending to all travellers and naturalists, whose pursuits or inclination lead them to a contemplation of nature, to examine lakes and the phenomena which they present. The objects to be considered may be summed up in a general manner, under the following heads:—

1. Geographical and Topographical situation.
2. Height above the level of the sea in English feet.
3. Length in British miles of sixty to the degree.
4. Depth in English feet.
5. The water
   - Temperature, according to Fahrenheit.
   - Colour and Transparency.
   - Quality and Analysis.
6. Affluent streams and springs . .
   - Name and Importance.
   - Quality and Quantity of water, and the detritus which they furnish.
   - Temperature at their Ingress.
7. Outlets . .
   - Ancient or Modern.
   - Dimensions and quantity of the water which they carry off, and whether clear or troubled.
   - Temperature at the Egress.
8. Climate and soil of the basin
   - At the bottom; and at different heights.
9. Prevailing wind.—Direction, quality, and duration.
10. Evaporation and Infiltration
    - Its Quantity, as deduced from all the circumstances which can affect it.
11. Particular phenomena.
12. Remarks.—Ascertained diminution, &c.

"Under these general heads may be arranged almost all the observations which it is desirable to make on the subject of lakes; and we repeat, that if all lakes of any note were carefully examined, under every point of view, and such examinations renewed after every five or ten years, much curious and useful knowledge would be procured to us, on a subject more important than is generally believed.

"It is the want of such observations which prevents our Essay from being as complete as we could wish it. We also confess our inability, under any circumstances, to do full justice to the subject. If, however, we shall have succeeded in drawing the attention of the scientific to this important branch of physical geography, and in creating an interest in its investigation, we shall not regard our effort as vain; and trusting the subject will be taken up by abler hands, we now dismiss it, having done our best, and soliciting indulgence in favour of our motive."



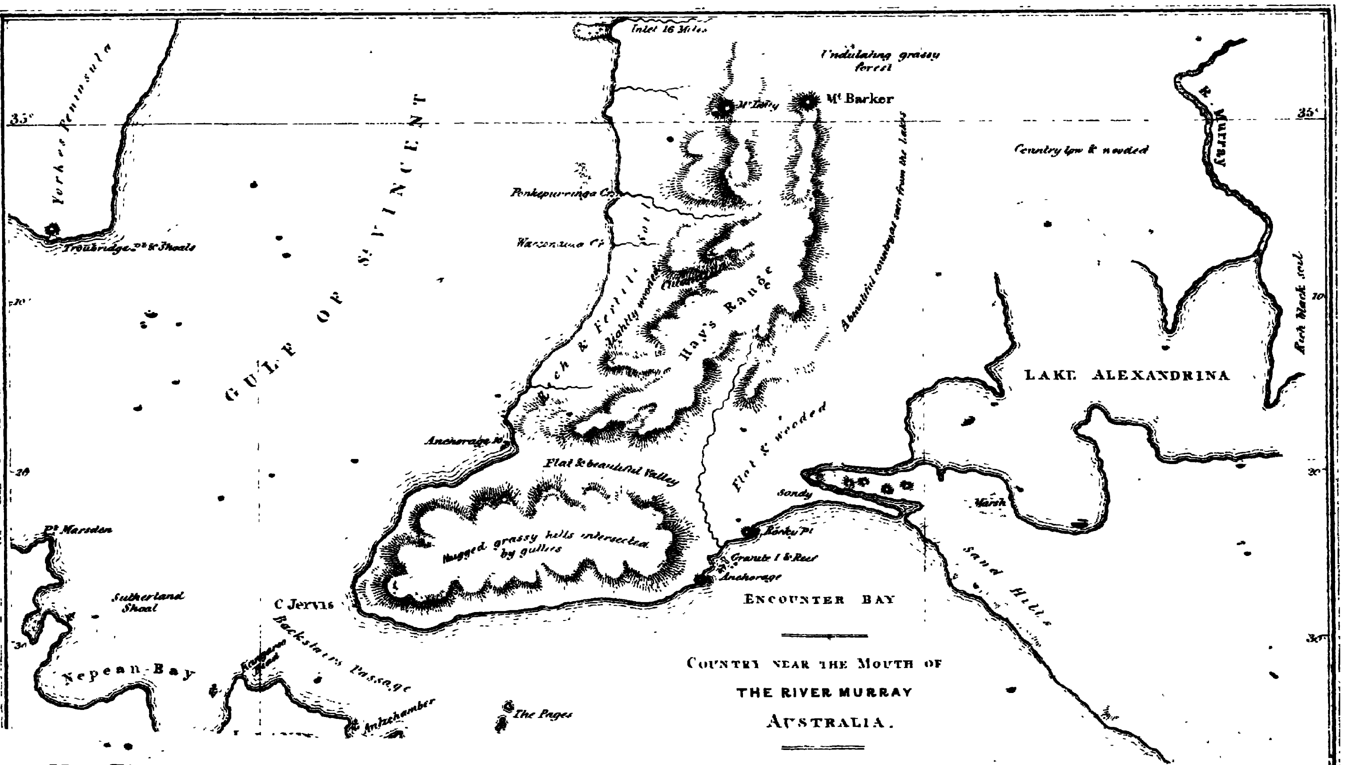
V.—*Two Expeditions into the Interior of Southern Australia, during the years 1828-29-30-31: with Observations on the Soil, Climate, and general Resources of the Colony of New South Wales.* By Captain Charles Sturt, 39th Regt., F.L.S. and F.R.G.S. 2 vols. 8vo. London. 1833.

The leading circumstances of these journeys have already appeared in this Journal *; but the interest of the work has not thus been superseded, consisting, as it does, chiefly in the minuter details and observations contained in the narrative. These are of especial value to those who desire to draw general conclusions regarding the interior of Australia from the facts, limited both in number and range, of which we are yet in possession respecting it. Captain Sturt is a geologist as well as traveller, and is the more ready to generalize from what he saw. He is also a draughtsman, apparently, of no mean skill; and his illustrations, both of scenery and natural history, are highly interesting.

It being unnecessary, however, to analyze his work (as it were) a second time, we shall merely notice one discrepancy between his observations, as now given by himself, and those which he was believed to have made when the former Paper in this Journal was drawn up. His opinions of the capabilities of the country about Lake Alexandrina (where he came out to the sea on his second journey) appear, in his work, to be generally more favourable than they were conceived to be by Mr. Cunningham: and it seems to be only justice, therefore, to give his own words in the following extract; the more interesting, as they furnish, at the same time, details regarding the fate of a subsequent traveller, whose death we noticed before in a note:—

"The foregoing narrative will have given the reader some idea of the state in which the expedition reached the bottom of that extensive and magnificent basin which receives the waters of the Murray. The men were, indeed, so exhausted in strength, and their provisions so much reduced, by the time they gained the coast, that I doubted much whether either would hold out to such place as we might hope for relief. Yet, reduced as the whole of us were from previous exertion, beset as our homeward path was by difficulty and danger, and involved as our eventual safety was in obscurity and doubt, I could not but deplore the necessity that obliged me to re-cross the Lake Alexandrina (as I had named it in honour of the heir-apparent to the British crown), and to relinquish the examination of its western shores. We were borne over its ruffled and agitated surface with such rapidity, that I had scarcely time to view it as we passed; but, cursory as my glance was, I could not but think I was leaving behind

* Vol. ii., pp. 118, 130.


Inlet 16 Miles
Undulating grassy forest
Mt Lofty
Mt Barker
35°
R. Murray
Country low & wooded
Yorkes Peninsula
Troubridge Pt & Shoals
GULF OF St VINCENT
Ponkepurringa Cr
Warrangauna Cr
Rich & Fertile Soil
Lightly wooded
Hay's Range
Abundant country as seen from the Lakes
Rich black soil
LAKE ALEXANDRINA
Anchorage
Flat & beautiful Valley
Flat & wooded
Sandy
Marsh
Rugged grassy hills intersected by gullies
Rocky Pt
Granite I & Reef
Anchorage
Pt Marsden
Sutherland Shoal
C Jervis
ENCOUNTER BAY
Sand Hills
Backstairs Passage
Nepean Bay
Antechamber
The Pages
COUNTRY NEAR THE MOUTH OF
THE RIVER MURRAY
AUSTRALIA.

me the fullest reward of our toil, in a country that would ultimately render our discoveries valuable, and benefit the colony for whose interests we were engaged. Hurried, I would repeat, as my view of it was, my eye never fell on a country of more promising aspect, or of more favourable position, than that which occupies the space between the lake and the ranges of St. Vincent's Gulf, and, continuing northerly from Mount Barker, stretches away without any visible boundary. It appeared to me, that, unless nature had deviated from her usual laws, this tract of country could not but be fertile, situated as it was to receive the mountain deposits on the one hand, and those of the lake upon the other.

"In my report to the Colonial Government, however, I did not feel myself justified in stating, to their full extent, opinions that were founded on probability and conjecture alone. But, although I was guarded in this particular, I strongly recommended a further examination of the coast, from the most eastern point of Encounter Bay to the head of St. Vincent's Gulf, to ascertain if any other than the known channel existed among the sand-hills of the former; or if, as I had every reason to hope from the great extent of water to the N.W., there was a practicable communication with the lake from the other; and I ventured to predict, that a closer survey of the interjacent country would be attended with the most beneficial results; nor have I a doubt that the promontory of Cape Jervis would ere this have been settled, had Captain Barker lived to complete his official reports.

"This zealous and excellent officer sailed from King George's Sound on the 10th of April, 1831, and arrived off Cape Jervis on the 13th. He was attended by Dr. Davies, one of the assistant-surgeons of his regiment, and by Mr. Kent, of the Commissariat. It is to the latter gentleman that the public are indebted for the greater part of the following details; he having attended Captain Barker closely during the whole of this short but disastrous excursion, and made notes as copious as they are interesting. At the time the Isabella arrived off Cape Jervis, the weather was clear and favourable. Captain Barker consequently stood into St. Vincent's Gulf, keeping as near as practicable to the eastern shore, in soundings that varied from six to ten fathoms, upon sand and mud. His immediate object was to ascertain if there was any communication with the Lake Alexandrina from the gulf. He ascended to lat. 34° 40′, where he fully satisfied himself that no channel did exist between them. He found, however, that the ranges behind Cape Jervis terminated abruptly at Mount Lofty, in lat. 34° 56′, and that a flat and wooded country succeeded to the N. and N.E. The shore of the gulf trended more to the N.N.W., and mud-flats and mangrove swamps prevailed along it.

"Mr. Kent informs me, that they landed for the first time on the 15th, but that they returned almost immediately to the vessel. On the 17th, Captain Barker again landed, with the intention of remaining on shore for two or three days. He was accompanied by Mr. Kent, his servant Mills, and two soldiers. The boat went to the

place at which they had before landed, as they thought they had discovered a small river with a bar entrance. They crossed the bar, and ascertained that it was a narrow inlet, of four miles in length, that terminated at the base of the ranges. The party were quite delighted with the aspect of the country on either side of the inlet, and with the bold and romantic scenery behind them. The former bore the appearance of natural meadows, lightly timbered, and covered with a variety of grasses. The soil was observed to be a rich, fat, chocolate-coloured earth, probably the decomposition of the deep-blue limestone, that showed itself along the coast hereabouts. On the other hand, a rocky glen made a cleft in the ranges at the head of the inlet; and they were supplied with abundance of fresh water, which remained in the deeper pools that had been filled by the torrents during late rains. The whole neighbourhood was so inviting, that the party slept at the head of the inlet.

"In the morning, Captain Barker proceeded to ascend Mount Lofty, accompanied by Mr. Kent and his servant, leaving the two soldiers at the bivouac, at which he directed them to remain until his return. Mr. Kent says they kept the ridge all the way, and rose above the sea by a gradual ascent. The rock-formation of the lower ranges appeared to be an argillaceous schist; the sides and summit of the ranges were covered with verdure, and the trees upon them were of more than ordinary size. The view to the eastward was shut out by other ranges, parallel to those on which they were; below them, to the westward, the same pleasing kind of country that flanked the inlet still continued.

"In the course of the day, they passed round the head of a deep ravine, whose smooth and grassy sides presented a beautiful appearance. The party stood six hundred feet above the bed of a small rivulet that occupied the bottom of the ravine. In some places huge blocks of granite interrupted its course; in others, the waters had worn the rock smooth. The polish of these rocks was quite beautiful, and the veins of red and white quartz which traversed them looked like mosaic work. They did not gain the top of Mount Lofty, but slept a few miles beyond the ravine. In the morning, they continued their journey, and crossing Mount Lofty, descended northerly to a point from which the range bent away a little to N.N.E., and then terminated. The view from this point was much more extensive than that from Mount Lofty itself. They overlooked a great part of the gulf, and could distinctly see the mountains at the head of it, to the N.N.W. To the N.W. there was a considerable indentation in the coast, which had escaped Captain Barker's notice when examining it. A mountain, very similar to Mount Lofty, bore due east of them, and appeared to be the termination of its range. They were separated by a valley of about ten miles in width, the appearance of which was not favourable. Mr. Kent states to me, that Captain Barker observed at the time, that he thought it probable I had mistaken this hill for Mount Lofty, since it shut out the view of the lake from him, and therefore he naturally concluded I could not have seen Mount

Lofty. I can readily imagine such an error to have been made by me, more especially as I remember, that at the time I was taking bearings in the lake, I thought Captain Flinders had not given Mount Lofty, as I then conceived it to be, its proper position in longitude. Both hills are in the same parallel of latitude. The mistake on my part is obvious. I have corrected it in the charts; and have availed myself of the opportunity thus afforded me of perpetuating, as far as I can, the name of an inestimable companion in Captain Barker himself.

"Immediately below the point on which they stood, Mr. Kent says, a low undulating country extended to the northward, as far as he could see. It was partly open, and partly wooded; and was everywhere covered with verdure. It continued round to the eastward, and apparently ran down southerly, at the opposite base of the Mount Barker range. I think there can be but little doubt that my view from the S.E., that is from the lake, extended over the same or a part of the same country. Captain Barker again slept on the summit of the range, near a large basin that looked like the mouth of a crater, in which huge fragments of rocks made a scene of the utmost confusion. These rocks were a coarse grey granite, of which the higher parts and northern termination of the Mount Lofty range are evidently formed; for Mr. Kent remarks, that it superseded the schistose formation at the ravine we have noticed—and that, subsequently, the sides of the hills became more broken, and valleys, or gullies, more properly speaking, very numerous. Captain Barker estimated the height of Mount Lofty, above the sea, at 2400 feet, and the distance of its summit from the coast at eleven miles. Mr. Kent says, they were surprised at the size of the trees on the immediate brow of it; they measured one, and found it to be forty-three feet in girth. Indeed, he adds, vegetation did not appear to have suffered either from its elevated position or from any prevailing wind. Eucalypti were the general timber on the ranges; one species of which, resembling strongly the black-butted gum, was remarkable for a scent peculiar to its bark.

"The party rejoined the soldiers on the 21st, and enjoyed the supply of fish which they had provided for them. The soldiers had amused themselves by fishing during Captain Barker's absence, and had been abundantly successful. Among others, they had taken a kind of salmon, which, though inferior in size, resembled in shape, in taste, and in the colour of its flesh, the salmon of Europe. I fancied that a fish which I observed, with extremely glittering scales, in the mouth of a seal, when myself on the coast, must have been of this kind; and I have no doubt that the lake is periodically visited by salmon, and that these fish retain their habits of entering fresh water at particular seasons, also, in the southern hemisphere.

"Immediately behind Cape Jervis, there is a small bay, in which, according to the information of the sealers who frequent Kangaroo Island, there is good and safe anchorage for seven months in the year, that is to say, during the prevalence of the E. and N.E. winds.

"Captain Barker landed on the 21st on this rocky point, at the northern extremity of this bay. He had, however, previously to this, examined the indentation in the coast which he had observed from Mount Lofty, and had ascertained that it was nothing more than an inlet; a spit of sand, projecting from the shore at right angles with it, concealed the mouth of the inlet. They took the boat to examine this point, and carried six fathoms soundings round the head of the spit to the mouth of the inlet, when it shoaled to two fathoms; and the landing was observed to be bad, by reason of mangrove swamps on either side of it. Mr. Kent, I think, told me that this inlet was from ten to twelve miles long. Can it be, that a current setting out of it at times has thrown up the sand-bank that protects its mouth, and that trees, or any other obstacle, have hidden its further prolongation from Captain Barker's notice? I have little hope that such is the case, but the remark is not an idle one.

"Between this inlet and the one formerly mentioned, a small and clear stream was discovered, to which Captain Barker kindly gave my name. On landing, the party, which consisted of the same persons as the former one, found themselves in a valley, which opened direct upon the bay. It was confined to the north from the chief range by a lateral ridge, that gradually declined towards, and terminated at, the rocky point on which they had landed. The other side of the valley was formed of a continuation of the main range, which also gradually declined to the south, and appeared to be connected with the hills at the extremity of the cape. The valley was from nine to ten miles in length, and from three to four in breadth. In crossing it, they ascertained that the lagoon from which the schooner had obtained a supply of water, was filled by a water-course that came down its centre. The soil in the valley was rich, but stony in some parts. There was an abundance of pasture over the whole, from amongst which they started numerous kangaroos. The scenery towards the ranges was beautiful and romantic; and the general appearance of the country such as to delight the whole party.

"Preserving a due east course, Captain Barker passed over the opposite range of hills, and descended almost immediately into a second valley that continued to the southwards. Its soil was poor and stony, and it was covered with low scrub. Crossing it, they ascended the opposite range, from the summit of which they had a view of Encounter Bay. An extensive flat stretched from beneath them to the eastward, and was backed in the distance by sand-hummocks and low-wooded hills. The extreme right of the flat rested upon the coast, at a rocky point, near which there were two or three islands. From the left, a beautiful valley opened upon it. A strong and clear rivulet from this valley traversed the flat obliquely, and fell into the sea at the rocky point, or a little to the southward of it. The hills forming the opposite side of the valley had already terminated. Captain Barker, therefore, ascended to higher ground, and at length obtained a view of the Lake Alexandrina, and the channel of its communication with the sea to the N.E. He now descended to the

flat, and frequently expressed his anxious wish to Mr. Kent, that I had been one of their number, to enjoy the beauty of the scenery around them, and to participate in their labours. Had fate so ordained it, it is possible the melancholy tragedy that soon after occurred might have been averted.

"At the termination of the flat they found themselves upon the banks of the channel, and close to the sand-hillock under which my tents had been pitched. From this point they proceeded along the line of sand-hills to the outlet; from which it would appear that Kangaroo Island is not visible, but that the distant point which I mistook for it was the S.E. angle of Cape Jervis. I have remarked, in describing that part of the coast, that there is a sand-hill to the eastward of the inlet, under which the tide runs strong, and the water is deep. Captain Barker judged the breadth of the channel to be a quarter of a mile, and he expressed a desire to swim across it to the sand-hill, to take bearings, and to ascertain the nature of the strand beyond it to the eastward.

"It unfortunately happened that he was the only one of the party who could swim well, in consequence of which his people remonstrated with him on the danger of making the attempt unattended. Notwithstanding, however, that he was seriously indisposed, he stript, and after Mr. Kent had fastened his compass on his head for him, he plunged into the water, and with difficulty gained the opposite side; to effect which took him nine minutes and fifty-eight seconds. His anxious comrades saw him ascend the hillock, and take several bearings; he then descended the farther side, and was never seen by them again.

"It afterwards appeared, that at a very considerable distance from the first sand-hill, there was another, to which Captain Barker must have walked, for the woman stated, that three natives were going to the shore from their tribe, and that they crossed his track. Their quick perception immediately told them it was an unusual impression. They followed upon it, and saw Captain Barker returning. They hesitated for a long time to approach him, being fearful of the instrument he carried. At length, however, they closed upon him: Captain Barker tried to sooth them, but finding they were determined to attack him, he made for the water, from which he could not have been very distant. One of the blacks immediately threw his spear and struck him in the hip. This did not, however, stop him. He got among the breakers, when he received the second spear in the shoulder. On this, turning round, he received a third full in the breast: with such deadly precision do these savages cast their weapons. It would appear that the third spear was already on its flight when Captain Barker turned, and it is to be hoped that it was at once mortal. He fell on his back into the water. The natives then rushed in, and dragging him out by the legs, seized their spears and inflicted innumerable wounds upon his body; after which they threw it into deep water, and the sea-tide carried it away.

"From the same source from which the particulars of his death

were obtained, it was reported that the natives who perpetrated the deed were influenced by no other motive than curiosity to ascertain if they had power to kill a white man. But we must be careful in giving credit to this, for it is much more probable, that the cruelties exercised by the sealers towards the blacks along the south coast may have instigated the latter to take vengeance on the innocent as well as on the guilty. It will be seen, by a reference to the chart, that Captain Barker, by crossing the channel, threw himself into the very hands of that tribe which had evinced such determined hostility to myself and my men. He got into the rear of their strong hold, and was sacrificed to those feelings of suspicion, and to that desire of revenge, which the savages never lose sight of until they have been gratified.

"It yet remains for me to state, that when Mr. Kent returned to the schooner, after this irreparable loss, he kept to the south of the place at which he had crossed the first range with Captain Barker, and travelled through a valley right across the promontory. He thus discovered that there was a division in the ranges, through which there was a direct and level road from the little bay, on the northern extremity of which they had last landed in St. Vincent's Gulf, to the rocky point of Encounter Bay. The importance of this fact will be better estimated when it is known that good anchorage is secured to small vessels inside the island that lies off the point of Encounter Bay, which is rendered still safer by a horse-shoe reef that forms, as it were, a thick wall to break the swell of the sea. But this anchorage is not safe for more than five months in the year. Independently of these points, however, Mr. Kent remarks, that the spit, a little to the mouth of Mount Lofty, would afford good shelter to minor vessels under its lee. When the nature of the country is taken into consideration, and the facility of entering that which lies between the ranges and the Lake Alexandrina, from the south, and of a direct communication with the lake itself, the want of an extensive harbour will, in some measure, be compensated for; more especially when it is known that within four leagues of Cape Jervis, a port, little inferior to Port Jackson, with a safe and broad entrance, exists at Rangaroo Island. The sealers have given this spot the name of American Harbour. In it, I am informed, vessels are completely land-locked, and secure from every wind. Kangaroo Island is not, however, fertile by any means. It abounds in shallow lakes, filled with salt water during high tides, and which by evaporation yield a vast quantity of salt.

"I gathered from the sealers, that neither the promontory separating St. Vincent from Spencer's Gulf, nor the neighbourhood of Port Lincoln, are other than barren and sandy wastes. They all agree in describing Port Lincoln itself as a magnificent roadstead, but equally agree as to the sterility of its shores. It appears, therefore, that the promontory of Cape Jervis owes its superiority to its natural features; in fact, to the mountains that occupy its centre, to the debris that has been washed from them, and to the decomposition of the better description of its rocks. Such is the case at Illawarra,

where the mountains approach the sea; such indeed is the case everywhere, at a certain distance from mountain ranges.

"From the above account it would appear, that a spot has at length been found upon the south coast of New Holland, to which the colonist might venture with every prospect of success; and in whose valleys the exile might hope to build for himself and for his family a peaceful and prosperous home. All who have ever landed upon the eastern shore of St. Vincent's Gulf, agree as to the richness of its soil and the abundance of its pasture. Indeed, if we cast our eyes upon the chart, and examine the natural features of the country behind Cape Jervis, we shall no longer wonder at its differing in soil and fertility from the low and sandy tracks that generally prevail along the shores of Australia. Without entering largely into the consideration of the more remote advantages that would, in all human probability, result from the establishment of a colony, rather than a penal settlement, at St. Vincent's Gulf, it will be expedient to glance hastily over the preceding narrative, and, disengaging it from all extraneous matter, to condense, as much as possible, the information it contains respecting the country itself; for I have been unable to introduce any passing remark, lest I should break the thread of an interesting detail.

"The country immediately behind Cape Jervis may, strictly speaking, be termed a promontory, bounded to the west by St. Vincent's Gulf, and to the east by the Lake Alexandrina and the sandy track separating that basin from the sea. Supposing a line to be drawn from the parallel of 34° 40′ to the eastward, it will strike the Murray River about twenty-five miles above the head of the lake, and will clear the ranges, of which Mount Lofty and Mount Barker are the respective terminations. This line will cut off a space whose greatest breadth will be fifty-five miles, whose length from north to south will be seventy-five, and whose surface exceeds seven millions of acres; from which if we deduct two millions for the unavailable hills, we shall have five millions of acres of land, of rich soil, upon which no scrub exists, and whose most distant points are accessible, through a level country on the one hand, and by water on the other. The southern extremity of the ranges can be turned by that valley through which Mr. Kent returned to the schooner, after Captain Barker's death. It is certain, therefore, that this valley not only secures so grand a point, but also presents a level line of communication from the small bay immediately to the north of the cape, to the rocky point of Encounter Bay; at both of which places there is safe anchorage at different periods of the year.

"The only objection that can be raised to the occupation of this spot, is the want of an available harbour. Yet it admits of great doubt whether the contiguity of Kangaroo Island to Cape Jervis, (serving as it does to break the force of the prevailing winds, as also of the heavy swell that would otherwise roll direct into the bay,) and the fact of its possessing a safe and commodious harbour, certainly at an available distance, does not in a great measure remove

the objection. Certain it is, that no port, with the exception of that on the shores of which the capital of Australia is situated, offers half the convenience of this, although it be detached between three and four leagues from the main.

"On the other hand it would appear, that there is no place from which at any time the survey of the more central parts of the continent could be so effectually carried on: for in a country like Australia, where the chief obstacle to be apprehended in travelling is the want of water, the facilities afforded by the Murray and its tributaries are indisputable; and I have little doubt that the very centre of the continent might be gained by a judicious and enterprising expedition. Certainly it is most desirable to ascertain whether the river I have supposed to be the Darling be really so or not. I have stated my objection to depôts, but I think, that if a party commenced its operations upon the Murray, from the junction upwards, and, after ascertaining the fact of its ultimate course, turned away to the N.W., up one of the tributaries of the Murray, with a supply of six months' provisions, the results would be of the most satisfactory kind, and the features of the country be wholly developed. I cannot, I think, conclude this work better than by expressing a hope that the Colonial Government will direct such measures to be adopted as may be necessary for the extension of our geographical knowledge in Australia. The facilities of fitting out expeditions in New South Wales render the expenses of little moment, when compared with the importance of the object in view; and although I am labouring under the effects of former attempts, yet would I willingly give such assistance as I could, to carry such an object into effect."

MISCELLANEOUS &c

I.—*On the Site of Susa.* By G. Long, Esq.

THE comparative geography of the provinces immediately east of the Tigris has given rise to much discussion among those who have directed their attention to the geography of Western Asia. The result of these inquiries is n the whole not satisfactory, and we must be content to remain in ignorance of the exact sites of numerous localities mentioned by Greek and Roman writers, who were themselves, in general, only half informed regarding the countries about which they were writing. There are two points in the geography of the provinces immediately east of the Tigris, which are of great importance to determine; one is the site of Ecbatana, and the other that of Susa. The former is certainly represented by Hamadan; but the latter is disputed, some writers being in favour of *Sus* or *Chouch*, on the east bank of the Kerah; and others standing up for Shuster or Touster (as oriental authors generally write it), on the east bank of the Karoon. The latter opinion is maintained in a tone of complacency, and of triumphant self-gratulation, more suitable to a more important matter, by Von Hammer, in his Geographical Memoir on Persia*; but as this writer seems to have come to a decision without adequate examination of the question, we shall endeavour to place the evidence on both sides fairly before the reader; premising, that in such matters complete proof is often not attainable, and assertions without proof are of no value.

Unfortunately, we do not possess a single Greek or Roman writer who was personally acquainted with the geography of Susiana, with the exception, perhaps, of Herodotus, and his statements are so brief, and of such a nature, as to be of very little value in deciding this question†. Diodorus, Strabo, and Arrian had access to the writings of the historians of Alexander; but they were personally unacquainted with the country, and often found no small difficulty in reconciling the conflicting statements of their

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* Recueil de Voyages et de Mémoires, publié par la Société de Géographie, tom. ii. Paris.

† We believe Herodotus did visit Susa, though his information is meagre.—See Dahlmann's *Herodot; aus seinem buche sein leben*, p. 77.

various authorities. We shall first briefly give the passages of antient writers which bear upon the question, and then see how far they are reconcilable with one another, and with the actual geography of Susiana.

The whole question as to the site of Susa is inseparable from that of its rivers; the determination of the site of Susa determines the identity of the rivers, and if the identity of the rivers can be determined, the site of Susa is determined. But, unfortunately, there is almost equal difficulty in determining both one and the other; and the only way to treat the question, is to see whether the supposition of Sus or Shuster being the site of Susa is more easily reconcilable with the actual geography of the country and the notices of ancient writers as to the rivers.

The following extracts are from Arrian's Expedition of Alexander, founded on the authority of Ptolemy and Aristobulus:—

Alexander marched from Babylon to Susa in twenty days (iii. 16, 12).—Having set out from Susa, and crossed the Pasitigris, he invaded the territory of the Uxii (iii. 17, 1)*.—The Uxii of the plains submitted: the mountaineers opposed him at the Pylæ (Persicæ): he proceeds to Persepolis and Pasargadæ (iii. 18, 17).

The navy of Alexander sails from the Persian Gulf up to Susia (the province). Alexander, who was then at Susa, embarks and sails down the Eulæus: he then sails from the mouth of the Eulæus, along the Gulf coast to the mouth of the Tigris (Shat el Arab):—the rest of the ships stopped before they came to the mouth of the Eulæus, and went along the artificial canal (the Hafar) into the Tigris. Alexander, having sailed along the coast between the mouths of the Eulæus and the Tigris, sailed up the Tigris (Shat el Arab), and came to the spot where Hephæstion was appointed to meet him with his army (vii. 7. 1).

The following extract is from Arrian, on the authority of Nearchus:—

The fleet sails to Diridotis, at the mouth of the Euphrates (the Khore Abdallah, probably): Diridotis (according to Nearchus) is 3300 stadia from Babylon, along the river.—Arrian, Indica, 41.

Nearchus sails back past the outlet of the Tigris to the mouth of the Pasitigris, which he ascends till he comes to the bridge of boats (σχεδία), by which Alexander was going to pass his army over to Susa.—Arrian, Indica, 42. Alexander was marching from Persepolis.

EXTRACTS FROM STRABO.

The walls, temples, and palace of Susa were built like those of Babylon, of burnt bricks and asphaltus,—as some have said.—Strab., p. 728.—Casaub.

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* Von Hammer quotes this passage to prove that the Pasitigris was the boundary of Susiana and the territory of the Uxii. He might just as well have attempted to prove from the passage that Susa was on the Pasitigris.

Polycleitus says, it was 200 stadia in circumference, and unwalled. Having adorned the palace at Susa more than any other, (the Persian kings) paid no less regard to the buildings at Persepolis and Pasargadæ. Both their treasures and their tombs were in Persia, which they considered to be a safer place.

Susa is said to have been founded by Tithonus, father of Memnon: it is 120 stadia in circumference, and of an oblong form. The acropolis was called Memnoneium.—Strab., p. 728.

The distance from Susa to Persepolis, according to Eratosthenes, is 4200 stadia; and from Persepolis to the borders of Carmania, 1600 stadia more.

Susa stands in the interior on the Choaspes, on the farther side, near the bridge; and the province extends to the sea-coast. The length of its sea-coast, nearly as far as the outlets of the Tigris, from the limits of the Persian coast, is about 3000 stadia. The Choaspes flows through the country, terminating in the same coast: it rises among the Uxii. Betwixt Susia and Persis, there is interposed a mountainous, rough, and precipitous country, with narrow, difficult passes; it is inhabited by robbers, who used to demand toll even of the kings, on their road from Susa to Persis. Polycleitus says, that the Choaspes, the Eulæus, and Tigris flow all into one lake (or æstuary), and thence into the sea; and that near the lake is an emporium (place of trade), as the rivers do not admit vessels nor allow the descent of commodities to the sea, on account of the falls purposely created in the river. All commodities are carried by land. Some say it is 800 stadia to Susa. Others tell us, that all the rivers through Susa* flow into one, the Tigris, as well as the intermediate channels of the Euphrates; and for this reason receive at their outlet the name of Pasitigris (all Tigris). But Nearchus, having described the whole coast of Susis as shallow, says, that "its limit is the Euphrates; and that near its mouth is a village, which is a depôt for Arabian merchandize,—for the sea-coast of the Arabians borders close on the mouth of the Euphrates and the Pasitigris; the whole intermediate space being occupied by a marsh (λίμνη), which receives the Tigris. Sailing up the Pasitigris 150 stadia, you come to the bridge of boats (σχεδία) leading to Susa from Persis, and distant from Susa 60 stadia. The Pasitigris is about 2000 stadia from the Oroatis †; and through the lake to the mouth of the Tigris, is a voyage up the stream of 600 stadia: near the mouth of the Tigris is a village of Susiana, distant from Susa 500 stadia; and from the Euphrates to Babylon is a distance of more than 3000 stadia, through a well-inhabited country." But Onesicritus says, that all the rivers flow into the (λίμνη), both the Euphrates and the Tigris; and that the Euphrates issuing from it reaches the sea by its own channel. ‡—Strabo, p, 728, &c.

* So in the text; but the meaning clearly is *Susis* or *Susia*, the province, not the town.

† The Arosis.

‡ Many of the numbers in this extract from Strabo are evidently corrupt; but this does not affect the question either way. The text also, as is usually the case where Strabo's knowledge is defective, is occasionally obscure.

In his march from Susa to Persis, Alexander "crossed several rivers, which flow through the country and down to the Persian Gulf. For next to the Choaspes is the Kopratas and the Pasitigris, which also flows from the country of the Uxii. There is also the Cyrus, which flows through hollow (mountainous) Persis, past Pasargadæ.—Near to Persepolis, Alexander crossed the Araxes, which flows from the country of the Paraetaci, and is joined by the Medus, which comes from Media. They flow through a fertile valley, bordering on Carmania and the eastern parts of the country, as Persepolis itself does. Alexander burnt Persepolis, and then marched to Pasargadæ, where there was an ancient palace and the tomb of Cyrus."

EXTRACTS FROM DIODORUS.

xvii. 67.—Alexander left Susa and arrived at the Tigris (Pasitigris) in four days. This river rises in the country of the Uxii, flows for 1000 stadia through a mountainous region, and for 600 more through a level country, when it enters the sea. His march was directed to Persepolis, to which he came after crossing the Araxes.

xix. 17.—When Antigonus was marching against Eumenes, the latter retired to the Tigris, distant *one** day's journey from Susa. This river is in many places three or four stadia wide, and in the middle of the stream just fordable by an elephant [or as deep as the height of an elephant]. Eumenes placed the Tigris between himself and his enemy, and lined the whole stream with his forces from its source to the sea. Antigonus, advancing from Susa, arrived at the Koprates, which rises in a mountainous country and flows into the Pasitigris: it is about four hundred feet wide and rapid. Antigonus having passed part of his troops over the river, Eumenes suddenly crosses the Tigris and attacks them. Antigonus retreats to Badace on the Eulæus, and with difficulty makes his way through the country of the Cossæi, in nine days, to the inhabited part of Media.

xix. 21.—Eumenes marched from the Pasitigris to Persepolis in twenty-four days.

xix. 55.—Antigonus, with his camels and baggage, &c., marched from Susa to Babylon in twenty-two days.

EXTRACTS FROM Q. CURTIUS.

ii. 9.—Alexander came to the Choaspes, and then entered Susa.

iii. i.—The king arrived at the Pasitigris from Susa in four days' march. "Rex quartis castris pervenit ad fluvium; Pasitigrin incolæ vocant."

We shall now briefly state Von Hammer's arguments in favour of Touster; and, first, of the rivers of Susiana. He considers it proved that the Eulæus and Choaspes are the same river, which

* This number is not correct, nor are the lengths of the river in the preceding extract. The eastern branch of the Karoon is, however, distant about one short day's journey (ten miles) from Shuster.

is now almost universally admitted. Without calling in to his aid the *incontestable* authority of the oriental geographers, it is sufficient, he says, to state that the Karoon, or Ab-i-Touster, (river of Shuster,) is the only one whose course reaches the sea, and renders the account of the movements of Nearchus' fleet possible. The Keré, or Karason, not having its outlet on the coast, (it flows into the Tigris,) cannot be the Eulæus or Choaspes. The following extract, in furtherance of this opinion, is given by Von Hammer from a Persian MS.:—

"The water of the Tigris, river of Shuster, comes from the Kouh-i-Zerde (yellow mountain) and from the mountains of the great Lour, and, after a course of more than thirty parasangs, comes to Chouster. The water is always cool, and has so digestive a power that, under this burning sky, the inhabitants of this country eat the heaviest food for the stomach, trusting to its digestive power—and they do digest."

This account of the excellence of its water, as Von Hammer remarks, agrees with what we are told by Herodotus, &c., of the Choaspes. The rest we shall give in his own words, as we intend to make use of it for a different purpose than that intended by the author.

"This property of its water, which has not changed for several thousand years, would be sufficient of itself to remove all difficulty, if its oriental name, Didjlè-i-Chouster, (the Tigris of Chouster,) did not offer an irrefragable proof that this river, *united to the Pasitigris*, was the river which the fleet of Nearchus ascended, and that on which Alexander, on leaving Susa, sailed down to meet him. The Pasitigris, (the modern Djerahi,) which flowed to the east of the Eulæus or Choaspes, united with this, the Karoon or Ab-i-Chouster of our days, which is still called the Didjlè-i-Chouster; and this leaves no doubt on the entire identity, since the Tigris, which joins the Euphrates in the bed of the Chat-oul-ârab, is called by the Orientals, Didjlè.

It is by the branch of the Karoun, or Ab-i-Chouster, which detaching itself near Zabla, falls into the sea to the west of Goban, that the fleet of Nearchus ascended this river, whilst Alexander descended it on leaving Susa. Arrian gives to it, at this outlet, the name of Pasitigris, as the Persian geographer calls it the Didjlè or Tigris of Shuster. The Pasitigris, which Alexander passed east of the Eulæus, is the Djerahi. Quintus Curtius says, that Alexander reached this river on the fourth day after leaving Susa, which agrees perfectly with the actual distance from Ram Hormouz to Shuster.

Von Hammer adds in a note—"This, the Djerahi, is the river that Timur, who took the same route as Alexander, passed on the fourth day, near Ram Hormouz." (Cherif-Ouddin, book iv. chap. 24.)

We have now given all that is material for forming a judgment, except the circumstance as to the tomb of Daniel. There is now

a tomb of Daniel at Sus, just as there is a tomb of Noah in Syria, and other equally credible monuments in abundance. Von Hammer quotes a passage from Ahmed of Tous to show that the body of the prophet was originally at Shuster and was removed to Shus; and this he considers some presumption in favour of Shuster. It would be mere waste of words to show that such evidence is worth nothing at all; as some, however, may be of a different opinion, the tomb of Daniel may be taken into the account in forming their conclusion.

There is no possibility of reconciling the extracts we have given with the actual geography of Susistan, except on the supposition of Sus representing Susa. It must be borne in mind that, on the supposition of Shuster being Susa, Alexander could not pass in any other direction in going from Babylon to Shuster than through the site of Sus, and it is totally incredible that he should pass through such an enormous town as this must have been without his historians ever noticing the fact. Between Babylon and Persepolis there is only *one* city mentioned, namely Susa, and this alone is a strong presumption against Shuster being on the site of Susa; for, as we shall see, Alexander might pass through Sus without passing through Shuster, but he could not pass through Shuster without having first passed through Sus.

Alexander's march from Babylon to Susa was twenty days, which allows about twelve and a half English miles, direct distance, for the daily march—an allowance amply sufficient. Antigonus was twenty-two days in marching from Susa to Babylon, being encumbered with much baggage. If we consider Shuster to be Susa, we must raise the day's march to sixteen miles at least,—a rate which is rather high *. From Susa, Alexander came to the Pasitigris in four days. If we suppose him to have crossed the Karoon just below or near Bund-i-keel, this again will allow twelve and a half miles, direct distance, for each day's march. It will be seen from this that we consider the Kerah to be the Choaspes, and the river of Shuster to be the Pasitigris. As to the Jerahi (the Pasitigris of Von Hammer), we do not conceive that Alexander crossed it at all,—and simply for this reason, that it did not lie in his route. Alexander's object was to reach Persepolis by the nearest road, and if he had crossed the Jerahi in any point whatever, except it might be some insignificant upper streamlet, he would have lengthened his march unnecessarily. In the route, given by Kinneir, from Shuster past Ram Hormuz, and past Calat Sefid (the white castle) to Shiraz, the Jerahi is not crossed. Now Persepolis (Tchil-minar) is *north* of Shiraz, and

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* From Captain Chesney's information, it appears, that the road-distance from Shuster to Sus is, at least, fifty-five or fifty-six miles.

therefore it would have been still more out of Alexander's route to have crossed the Jerahi on his march to the Persian capital. Again, if the Pylæ Persicæ *can* be determined with any degree of probability, they are represented by Calat Sefid, the very place which Kinneir passed. Further, the least *direct* distance from Shuster to *any* point of the Jerahi is eighty miles, which is much too large for a four days' march; and to Ram Hormuz, which Von Hammer reckons as the place of crossing, the *direct* distance is near one hundred miles. Timur's route to Calat Sefid must have been the same as Kinneir's; but there is no mention made of Timur's crossing the Jerahi, nor was there any occasion to cross that river in order to reach Calat Sefid. The streams which Timur did cross are small tributaries either to the Karoon or the Jerahi, or they do not exist; or else they are merely such occasional streams as appear in this part of the world*. It is rather curious that Timur should meet with two rivers or streams between Shuster and the river of Ram Hormuz, while Mr. Kinneir describes the same route as a "country wild and barren greatest part of the way, destitute of water;" but perhaps it may be accounted for from the consideration last mentioned.

Von Hammer has mistaken Timur's march in saying "that he passed on the fourth day near Ram Hormuz." It stands thus—

April 17.—Timur being at Shuster separated himself from the main body of the army and advanced *rapidly* towards Shiraz.

April 19.—Crossed the Doudank (two tanks).

— 21.—Encamped on the banks of the Kouroukhankende.

— 22.—He marched to Ram Hormuz, received the homage of a native prince, crossed the river of Ram Hormuz, and encamped on the eastern bank, &c. (Cherefeddon, by Petis de la Croix, ii., p. 183.)

The Kouroukhankende is a river of the valley of Ram Hormuz, which "descends from the mountains, six miles *east* of the town of Ram Hormuz,"† and joins the Jerahi. It is one hundred miles *direct* distance from Shuster, and required, as we have seen, on any reckoning, at least *five* days hard marching for Timur's troops. In a note we find that Von Hammer says this Kouroukhankende is the Pasitigris. This name, then, he applies both to the Kouroukhankende (a tributary of the Jerahi), and to the Jerahi itself—which Jerahi, further, he considers to be the Pasitigris, *because* the river of Shuster is now called the Dijelé, the real native name both for the Tigris and Pasitigris. Such a mode of argument is more

* There are, says Captain Chesney, no streams of any size whatever, between the town of Samania and Hassmania, falling into the Karoon.

† This is Kinneir's description of this river, p. 93. But in his route, p. 457, he mentions no stream at all between Shuster and Ram Hormuz. It is impossible to say, from his description, what is the exact course of the Kouroukhankende.

curious than convincing. We might as well say that the Medway was the ancient Thames, because the modern Thames bears its present name. We think it demonstrated, that the Pasitigris is not the Jerahi. But there are other obstacles to the hypothesis of Shuster representing Susa.

We cannot conceive it possible that the historians of Alexander should have left without a name the Ab-i-zal, or the large stream which some consider as the western branch of the Karoon, but which, as others imagine, joins the Hawiza or Kerah river; and yet this must be the case, if we assume Shuster to be on the site of Susa. Von Hammer calls the Kerah, the Gyndes—a river which we shall not attempt to identify; but supposing it to be the Gyndes, what name must we give to this large river between his Gyndes and his Choaspes, a river about as large as either of them? The bridge over the Ab-i-zal is three hundred and fifty yards in length,* and this stream is hardly inferior to the Karoon. The wars of Antigonus and Eumenes are only intelligible on the supposition of this river being the Kopratas. There is no stream *east* of the Karoon which will correspond with the description of the Kopratas.

The great Tigris was called, in ancient times, Dijel, in the upper part of its course,—a name recorded by Pliny (Diglito, vi. 27),—and it still bears the name.† The Karoon, which we suppose to be the Pasitigris, also still retains the name of Dijel, or the Dijel of Shuster. The Greek writers often call it simply Tigris, but more commonly Pasitigris, which probably means the Persian Tigris. The extracts of Von Hammer, therefore, when properly understood, confirm the opinion of the Karoon being the ancient Pasitigris, and therefore not the river of Susa.

We learn from the voyage of Nearchus (Arrian, Indica) that he ascended the Pasitigris till he came to the bridge of boats by which Alexander was going to pass his army over the Pasitigris, in his march from Persepolis to Susa. This river we believe to be the Karoon below Bund-i-keel. If the Pasitigris is the Jerahi, Alexander was necessarily on the *south* side of that river, and at some point upon it up to which Nearchus had sailed. Where this point was, and how Alexander possibly could come there, we leave the curious to find out.

A difficulty remains, which we cannot explain, except on the supposition that Arrian's notion of the rivers of Susiana was as confused as that of Vincent, D'Anville, and geographers generally, till Kinneir's Memoir appeared, which itself will some time be found to require considerable corrections. Alexander is said, by Arrian, when using the authority of Ptolemy and Aristobulus, to

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* Capt. Chesney.

† See Niebuhr.

have sailed down the Eulæus, and while the rest of the ships went through the Hafar cut, he continued his course to the gulf and along the coast till he ascended the Tigris. The river that he sailed down could certainly be no other than the Karoon, the same stream that Nearchus calls the Pasitigris. This difficulty should be fairly stated, and it is no small one; but if it cannot be removed, it may perhaps be diminished. We think it probable that the communication between Susa (supposed to be Sus) and the gulf would be made by the Karoon, and not by the Kerah: it would be more convenient to ascend the Karoon to the junction of the two branches at Bund-i-keel, and thence to march to Susa, than to ascend the Tigris, and then strike off up the Kerah to Sus. Whether, indeed, the Kerah is navigable as far as Sus, we do not know: we only know that, in modern times, it has been hardly examined at all, while the Karoon is pretty well known; and this may have been the case formerly for the reasons just mentioned. We should remark that, when Alexander's vessels sailed up the Pasitigris (Karoon), as they undoubtedly did, it is not said that they went to Susa, but to Susia, the district of Susa. It is not improbable, supposing Sus to be Susa, that the communication with that city through the Karoon might lead to some confusion between the Eulæus and Pasitigris. The hypothesis of Shuster representing Susa removes *this* difficulty and this contradiction in Arrian, but whether it does not create much greater difficulties, and such as are absolutely irreconcilable both with the actual geography and the passages quoted from ancient writers, we leave to the consideration of those who will take the pains to weigh the evidence.

We are indebted to the kindness of Captain Chesney for a rough sketch, simply intended to show the number, the order, and the general course of the Susiana rivers. From this sketch it appears, that it is still a disputed point whether the Ab-i-zal joins the Karoon or the Kerah. Captain Chesney thinks that it joins the Kerah at Hawiza. Both D'Anville (Memoire sur l' Euphrate, &c.) and Rennell make the Ab-i-zal fall into the Kerah. Captain Chesney, in addition to examining the lower course of the Karoon, traced the river also carefully from Ahwaz up to Bund-i-keel and thence to Shuster. From his examination, it appears that the western branch at Bund-i-keel is not the Ab-i-zal, according to Kinneir's map, but the river of Shuster, and that the eastern branch is that on which Hassmania stands. Hassmania is (according to Captain Chesney) ten miles east of Shuster, on the right bank of a stream, which must be considered as the Kopratas by those who identify the Eulæus or Choaspes, and the Karoon.

The Ab-i-zal, it appears, is said to be a branch of the Kerah, or Hawiza river. There is also, as Captain Chesney states, no stream falling into the Karoon between Samaniah and Hassmania.

"There is," says Captain Chesney, "a most striking resemblance in the appearance of Sus and Babylon. The ruins of Sus are not quite so extensive as those of Babylon, but they are much higher and more imposing: the least mounds of Sus (about eighty feet high) are as high as the most elevated at Babylon; and the supposed palace of Ahasuerus is only three feet lower than Aggerkuf.—At Susa we have the arrow-headed characters on two pieces of marble; and we have large bricks, both sun-dried and burnt, with bitumen as cement. At Shuster and Dezphoul there were no arrow-headed characters to be met with.

"Shuster is about the size of Shiraz, and contains, according to the people of the place, from ten to twelve thousand houses, all on the left bank of the Karoon. The river is crossed by an ancient bridge at the south-western extremity, about three hundred yards long. One hundred and fifty yards north-east of the bridge rises a bluff hill of sand-rock on which stands the castle, part of which is very ancient. Farther on, skirting the river, and on ground of the same elevation, stands a portion of the town; at the northern extremity of which is the Bund, forming the artificial derivation. The rest of the town spreads eastward from the river in a semicircular form, covering undulating ground, the highest part of which is to the north-east, and rather shelving south and west. The town is surrounded, in its whole circuit, by a wall of unburnt bricks, flanked by semicircular towers, and washed by the artificial canal on one side and the Karoon on the opposite. North of the town, and outside of the present walls, are considerable remains of the ancient city, chiefly of unburnt bricks, underground apartments, and some few water kanauts at a little distance, which are all that remain, with the exception of a part of the ancient walls and their towers, which may still be traced, although they are almost reduced to a heap of rubbish. The right bank of the Karoon is chiefly of rock, and rises abruptly from the river: it contains numerous excavations, generally in two rows one above the other, evidently intended for dwellings: some of them are still used as such. Beyond these are some few brick remains of the ancient city, intersected by canals from the Karoon; so that the former city occupied both banks, whereas the modern one is entirely on the left."

In this last respect, the city of Shuster does not correspond to that of Susa, which city all allow to have been entirely on the east side of the river, as the ruins of Sus are. As to the acropolis or hill found at Shuster, we must remark that Strabo does not say that the acropolis or citadel of Susa was on a *hill*, as some say he does; and, besides this, the mounds that remain at Sus are quite large enough to satisfy the demands of any passage in which they are mentioned. "The principal ruin of Sus," says Captain Chesney, "is an irregular parallelogram, the two large sides being about 1700 feet east and west, the shorter, 576 south and north: the sides are at an angle of about 75°, and the length of the slope, from top to bottom, 172 feet, covered with pieces of tile coloured

and glazed, pottery, and green and blue glass; when the earth is partly washed away, or removed, bricks show all round the mound."

Susa, we are told by some authorities, was not walled, and we are not aware of any traces of walls about Sus. The city on the site of Shuster, as we have seen, was walled. Von Hammer conjectures, or rather asserts, that Sus is the site of Elymais, which contained a great temple of Venus and Diana, or of some other deity. This is an assertion not only without proof, but totally inconsistent with any possible mode of arranging the ancient political divisions of the countries east of the Tigris, in conformity with the authority of ancient writers. The route from Babylon to Susa did not pass through the province of Elymais, which must be the case if Susa is the site of this ancient city or temple. The proper Elymais was in or near a mountainous country, and was probably either on the site of Shuster, which is near the mountains, or it is represented by the great remains of the temple of Artemis at Kengavar.* But the whole subject of the Elymæi is one of great difficulty; and, in arguing upon the authority of ancient writers, we should not forget that their obscurity and contradictions may be taken as an index of the confusion already existing in their time as to the primary seat, the migrations, and the whole history of the numerous tribes of ancient Media and Persia.

We have not been able to learn whether the water of the Kerah possesses those excellent stomachic qualities attributed to the ancient Choaspes and the modern river of Shuster. As the banks of the Kerah have not been so populous since Shuster became the chief city of this district, the waters of this river have not had a fair chance of participating in those praises which oriental writers and Persian authors very readily bestow on any tolerably clear and drinkable stream. If it should turn out that the waters of the Kerah at Sus are as salt as those of Lake Bakhtegan, we must confess this would be decisive against the claims of Susa. We believe, however, considering the mountain region from which they flow, that the streams of the Kerah are as pure and fresh as those of the river of Shuster.

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* See Isidor. Charac., Stathmi, Parth.; and Ker Porter's description of the ruins of Kengavar.

II.—*On the Natural Advantages of Cochin as a Place of Trade.* Extracted from a Memoir addressed to the Madras Government by F. C. Brown, Esq., Calicut. Dated June 5, 1832.

Nature has provided South Malabar, and nearly all Travancore, with a noble system of inland navigation, called the Backwater. Such a gift to countries without roads, or wheel-carriages, or beasts of burden, is calculated to be of inestimable value. The Backwater extends from Chowghaut in Malabar north, to Trivanderam, the capital of Travancore, within fifty miles of Cape Comorin south, a distance of one hundred and seventy or one hundred and eighty miles. A continuation of it is in progress of being *naturally* formed; and is, in fact, navigable for small boats, during the rains, from Chowghaut to Cotah, sixteen miles south of Tellicherry, a further distance of about ninety miles: and all that this portion requires is that the bed be deepened during the dry weather,—the rivers descending to the sea, every eight or ten miles, will flow into and fill the deepened bed during the rains.

The Backwater runs nearly parallel to the sea, sometimes at the distance of a few hundred yards, at others of three or four miles. Its breadth varies from twelve and fourteen miles to two hundred yards; its depth, from many fathoms to a few feet. Into this Backwater, as into a grand trunk, all the numerous rivers flowing, like so many veins, from the Western Ghauts, are discharged and retained. The Backwater empties itself into the sea only by six mouths; of all which, the only one navigable for ships is the mouth on the south bank of which is situated Cochin. There is a bar at this mouth; the depth of water on the bar at high-water spring tides is seventeen or eighteen feet. Without the bar there are no dangers. The only month perhaps in the year in which ships from seaward could not enter is July. The anchorage without is good: the gales during the south-west monsoon are rarely of such violence as are yearly experienced by ships in the harbour of Bombay, at the same season. Within the bar, the Backwater expands into a fine estuary, three, five, and six miles wide, at least twelve miles long, and deep enough for the largest ships:—dows and pattamars, of sixty and seventy tons burthen, load and discharge at the water's edge; ships, at the distance of a cable's length. The yards for ship-building are situate to the north and south of the main street of the bazaar. To the north were built several sloops of war; one of them, the Alligator, is now on the Indian station. The ground of the building-yards is the property of government. Each yard is let for one year only, consequently not one is walled in; nor is there any attempt to

build wharfs, warehouses, docks, or any one permanent structure. The opposite, or Cochin side of the Backwater (so called from its belonging to the Rajah), and the shores of the island of Oypeen north, are equally well adapted for ship-building, or for laying-down patent slips, on which ships are as well repaired as in dry docks. Timber of all kinds, some more valued by the natives for maritime purposes even than teak, and considered hardly inferior by European judges, is to be had in unlimited abundance, and at the lowest price. Workmen are good and numerous; their hire one-half less than in Bombay. With all these singular and pre-eminent advantages, there is not one European ship-builder, nor one merchant of capital and respectability established at Cochin.

Its business is limited to building one or two vessels yearly, by and chiefly for natives on the coast. Lately, the Imaum of Muscat has been the great builder. To repair a ship here may be declared impracticable. The bark Newton, of three hundred tons, from Bombay to London, grounded *in April*, 1831, on one of the Laccadives; the captain bore up for Cochin as the nearest port. The accident anywhere else would not have detained him a fortnight: in April last, one twelvemonth after, there he was, and probably still is. So far was he from finding any person to repair his ship, quite a new one, that a plot was immediately laid for having her condemned, and herself and cargo sold; which plot was only defeated by the honesty of a Parsee merchant. The captain, a simple-minded English seaman, was then obliged himself to undertake the repairs. The cargo he disposed of, in order to raise money—it was given away rather than sold; his officers and crew grew impatient and left him; he was plundered of clothes, chronometer, sextant, charts, of every thing, in short, that could be carried off, down to the ring-bolts of his ship: and he has been as mercilessly treated (my informant tells me) as if he had been cast on a shore of wreckers. To complain to the nearest magistrate, required him to leave his ship, and take a journey of one hundred miles to Calicut. No wonder that friend and foe avoid Cochin; no wonder that the hundreds of vessels, English, native, and Arab, which would flock there for repairs, from economy and convenience, now all resort, at double and treble the expense, to Bombay and Calcutta: no wonder, that some thousand tons of teak, the produce of Malabar and Travancore, which would be floated thither in two or three days without risk or expense, either by the sea or the Backwater, are, in preference, all shipped on board vessels and sent to Bombay, a voyage of six or eight hundred miles; taking sometimes forty to fifty days. Such, owing to the insecurity of property and person, is the state of the only port of construction under the presidency of Madras, and

the only place of shelter, except Bombay, throughout the whole extent of the western coast.

The advantages possessed by Cochin, as a place of trade, are not less great, and are rendered as barren and abortive. Sixty years ago, in the time of Stavorinus, and in the hands of the Dutch, it was what Bombay is, the emporium of the western coast. Why it has ceased to be so, it is not difficult to discover.

[Mr. Brown here details the disadvantages, almost entirely owing to fiscal regulations, under which the navigation of the Backwater now labours, with the effects of these on the prosperity of the adjoining countries. He concludes as follows.]

Such is the state of Cochin. To descant upon the value of such a port to the fertile countries in which it is situated, or with which it has immediate, easy, and natural access, would be a work of supererogation. Much has been written, and great praise most justly bestowed, upon the sound and sure-sighted policy which seized on such a desert as Singapore, and saw in it the future mart of a boundless and lucrative commerce,—the centre whence its attendant blessings, knowledge, civilization, and wealth, would radiate and spread among the barbarous hordes of the Archipelago. Here is not a desert, but a peopled Singapore, in the very heart of our own territories, and surrounded by our dependencies; countries gifted by nature with a boundless extent of fertile soil, a fine climate, producing grain in a vast superabundance, and as cheaply as in Bengal; rich in numerous other valuable staples, such as timber, cotton, hemp, oils, pepper, ginger, turmeric, cardamoms, betel-nut, copra, ivory, gold dust, iron, and drugs—all that is required to give value and activity to exchange; where the indigo plant flourishes spontaneously, and where the growth of the sugar-cane, of coffee, of the clove, nutmeg, and pimento, and, lastly, of raw silk, has ceased to be matter of doubt. And yet, with all these undoubted proofs of natural wealth and great capabilities, these countries are admitted to be neither prosperous, contented, nor happy.

It is my firm belief, however, that the amelioration of their condition is neither difficult, doubtful, nor costly; the raising of Cochin from its present abject state to the rank of a principal port in Southern India would be one important point; but this part of the subject is foreign to the present purpose.

III.—*On the Seiches of Lakes.* By Colonel J. R. Jackson, F.R.G.S., St. Petersburgh.

The Lake Leman, or of Geneva, has been long remarkable for a phenomenon, known by the name of *seiches*, and which has been considered peculiar to this lake: it consists of a kind of ebb and flow of the waters of the lake, in certain parts, without wind or any other apparent cause. While the phenomenon lasts, the waters are seen to rise and fall several times in the course of a few hours. These oscillations, more or less considerable, sometimes attain the height of five feet, though the general maximum seldom exceeds two feet: in the greater number of cases the rise is confined to a few inches, the minimum being 0.

The *seiches* of the Lake of Geneva were observed, in the beginning of the last century, by Fatio de Duilliers, who has given a description of them in a Memoire inserted in the second volume of Spore's "Histoire de Geneve." Shortly after, Professor Jallabert made mention of them in the "Mémoires de l'Académie des Sciences." And, more lately, Mr. Serre, in the "Journal des Savans;" Professor Bertrand, in an academical dissertation, not printed; as also, Desaussure, in the first volume of his "Voyage aux Alpes," have successively described this singular phenomenon.

Nothing, however, having been explained in a sufficiently satisfactory manner, I wrote, some months since, to a learned professor of Geneva, on the subject,—proposing questions, the answers to which I hoped might throw some light on the nature of a fact which I apprehended to be by no means peculiar to the Lake of Geneva; and I have reason to congratulate myself, that the result of this step has been the publication of an able and detailed memoir on the subject by Professor Vaucher, which memoir had been written many years before, and which, in all probability, would never have been printed but at the instigation of Professor Maurice, to whom I had written, and who, with that readiness which distinguishes the real lover of science, interested himself immediately in the subject.

From Professor Vaucher's memoir, a quarto of sixty pages, written in French, so far back as the years 1803-4, it appears,—

1st. That the seiches of the Lake of Geneva are much more frequent than is generally imagined.

2dly. That they happen indifferently at all seasons of the year, and at all hours of the day; but that they are, generally speaking, most frequent in the spring and in the autumn.

3dly. That the state of the atmosphere seems to have a decided influence, it being remarked, that in proportion as that state is

less changeable, so are the seiches less frequent, and *vice versâ*. The seiches have always been "*considérable*" (query—as to frequency or magnitude?) when the atmosphere has been loaded with heavy clouds, or when the weather, in other respects serene, has threatened to be stormy, and when the barometer has sunk.

4thly. That although the seiches are more frequent in the spring and in the autumn, they are however more "*considérables*" (rise higher) in the summer, and in particular towards the close of that season. The highest that have been observed happened in the month of September.

5thly. The minimum of the seiches has no precise term; their maximum seems to be five feet.

6thly. That although the duration of the seiches is very variable, its greatest extent seems not to exceed twenty or twenty-five minutes, but usually lasts a much shorter time.

7thly. That the seiches are not peculiar to the Lake of Geneva, M. Vaucher having observed them on the Lakes of Zurich, of Annecy, and of Constance.

It appears unquestionable, that the phenomenon of the seiches is due to an unequal pressure of the atmosphere on different parts of the lake at the same time; that is, to the simultaneous effect of columns of air of different weight or different elasticity, arising from temporary variations of temperature or from mechanical causes; and if such be in fact the case, all lakes of a certain extent, and even inland seas, must be subject to the same influence, and therefore present the same phenomenon; and I have little doubt but that correct observations will verify this presumption.

Moreover, the effect of unequal atmospheric pressure, in producing inequality in the level of the surface of large masses of water, once established as a positive fact, will throw much light upon several subjects interesting to physical geography, particularly upon that of currents, as affected by sea and land breezes, irregular winds, sudden changes of temperature, the configuration and aspect of coasts as regards the sun; and the consequent periodical influence of reverberated heat on the density of the circumjacent air.

It is, therefore, upon those considerations that I am desirous of calling to the subject the attention of such persons, as from the habitual nature of their occupations, or their studies, or their love of science, are best enabled to add to our knowledge regarding it. And in the hopes that some of the members of our society, or that, at their instigation, others, who may be in the vicinity of lakes in any part of the world, will take up the subject, I shall venture to offer what I conceive to be the best method of operating.

1st. Several points must be chosen on the lake, some in its narrower and some in its wider parts, as well as at the mouth of its most considerable *affluent*, and at the immediate egress of its main outlet. If the surface of the lake be observed to incline towards the outlet from any distance, a station should be established at the commencement of this slope as well as at the immediate egress.

2dly. These points once chosen, a squared pole must be driven, having marked upon it, in white upon a black, or in black upon a white ground, feet, inches, and lines, for at least five feet above and as many below the general water level. To this pole must be added a float, surmounted by a rod to act as an indicator, which rod must slide easily in brackets fastened to the pole. Round the pole, and rising above the water, an inclosure of about two or three feet diameter must be established, of hurdles or planks, in such wise, that, while the water within has free communication with that which is without the inclosure, so as to rise and fall with it, the former may be kept calm and secured from all influence of winds and waves.

3dly. These stations being established, two observers, at least, and more if possible, must commence their observations at an hour agreed upon, having first compared their watches. If *each* observer could at the same time be furnished with a barometer, thermometer, and hygrometer, the general results of their observations would be so much the more satisfactory; but one instrument of each kind is indispensable. In the former case, each observer will note the indications of his own instruments.

4thly. Care must therefore be taken to note down at the beginning, during, and at the close of the observations, the indications of the several instruments, together with the general state of the weather and the direction of the wind, if there be any, though it is most advisable to observe before and after wind.

5thly. The change of level of the water must be noted sometimes every minute; at others, every ten minutes, every half-hour, or every hour. The observations should be sometimes made at sunrise, three hours after his ascension, at noon, at three in the afternoon, and at sunset, as also after, if convenient, in order to see how far the hour exercises an influence on the phenomenon. It would likewise be well to observe if the moon has any influence, and, for this purpose, observations should be made at the new and full moons, and at the quadratures.

6thly. On an outline sketch plan of the lake must be marked the different stations, numbered or lettered, indicating the distance of each station from every other. This is necessary, in order that the observer may be assured whether the rise or fall observed simultaneously at two or more stations are distinct and inde-

pendent, though simultaneous effects, or dependent and corresponding oscillations.

7thly. For each series of observations, a table, in the following form, should be arranged.

Observations of the Seiches of Lake ______________
made by ______________ *Date* ______________

Time of Day.		Station A.	Station B.	&c.	Remarks.
Hour.	Min.				
		ft. in. li.	ft. in. li.		
9	0	R. or F.* 0 0 0	R. or F. 0 0 0		
	10				
	20				
	&c.				

Moreover, in order that nothing may be omitted which can be supposed to exercise any influence, the topographical structure of the basin, and particularly the aspect, height, position, and nature of the hills in the immediate vicinity of the lake, if there be any; or, otherwise, their absence must be carefully noted.

It were needless to add, that the more numerous the observations the better; and the more that may be made simultaneously, the more satisfactory will be the result.

I will not presume so far to question the sagacity of the Society as to enumerate all the advantages that are likely to accrue from observations of the kind just stated; they will be, I doubt not, as evident to all as they are to myself, and it is from this conviction that I venture to call the attention of my colleagues to the subject.

Schutten, as may be seen in the "Mémoires de l'Académie des Sciences de Stockholm," for 1804, explains the irregular rise and fall of the Baltic on the same principle as De Saussure and Vaucher explain the seiches of the lake of Geneva. I hope to be one day enabled to add further observations in support of the general prevalence of the phenomenon.

I have lately written to a most eminent philosopher, the present boast of Sweden, begging of him to institute observations (similar to those here proposed) upon the great lakes of his country; I have

* R. or F. for *rise* or *fall*, as it may be. As all that is required is *relative* rise and fall, the height at which the water may be found on commencing the operation will always be 0. In the column of remarks will be consigned the indications of the barometer, &c.

also written to the United States, on the same subject; and circulars have been addressed, officially, to the engineer officers stationed at the several great lakes of Russia, as far as the Baikal, for the same purpose. If, as I trust, we shall by these means obtain a mass of well-authenticated information, we shall have one fact more to add to our knowledge of the earth, and one fact often leads to many. I sincerely hope the Royal Geographical Society will not consider the subject unworthy their notice.

IV.—*On the Communication between the Atlantic and Pacific Oceans, by way of the Lake of Nicaragua.* Communicated by Captain Phillips, R.N., F.R.G.S.

In the month of January, 1833, the Spanish merchants residing at Kingston, Jamaica, connected with central America, requested the senior naval officer at Port Royal to allow the ship of war that carried the mail to Chagres to proceed on to San Juan de Nicaragua, expecting that, if a regular monthly communication were established with San Juan de Nicaragua, as there is between Chagres and Port Royal, that the merchants of central America would gladly avail themselves of it to carry on a commercial intercourse direct with Jamaica, instead of by Omoa and Truxillo to Belize. Commodore Farquhar, acceding to their wishes, sent the Ariadne for that purpose. When at San Juan de Nicaragua, a merchant (with his two sons), from Costa Rica, was embarked, who had been for the last thirty years traversing Costa Rica and Guatemala, a dealer in mules, and in all the productions of the commerce of that country; and consequently quite capable, from the experience he had obtained, added to his natural shrewdness, of giving such information relative to the commercial productions of the towns, inhabitants, &c. of central America, as would serve to give some notion of the immense advantages likely to be obtained by establishing a direct communication between San Juan de Nicaragua and San Juan del Sul on the Pacific. This might, it appears, be easily effected by cutting a canal from the town of Nicaragua to the port of San Juan del Sul, and by establishing steam-boats on the lake and river of San Juan de Nicaragua.

Mr. Lloyd, formerly attached to the staff of Bolivar, has given, in the Philosophical Transactions for the year 1829, and in the first volume of the Geographical Society's Transactions, a most interesting description of the road proposed to be made from La Trinidad to Chorrera or Panama; which account was borne out in all its particulars by some Panamanian merchants of great respectability, who were embarked on board the Ariadne, at

Chagres. And his plan of the port of Limon was also said to be most accurate in all its parts, showing minute labour and intelligence in its detail.

To those who have read Mr. Lloyd's Memoranda, it will be easy to compare the advantages he proposes with the details given by the Costa Rica merchant; and when the comparison is made, it is to be borne in recollection, that the passage by Panama leads alone to the Pacific, whilst the passage by San Juan de Nicaragua would affect the whole of the internal commerce of Costa Riça and central America, and most likely be not only the means of a commercial transit to the South Seas, but, from the influx of strangers, and the interchange of ideas naturally arising from it, would tend to enlighten this district of the country, which civil war, with all its horrors, is fast driving to the lowest state of ignorance and barbarism.

It is meant, in the first place, to give a description of the ports in the Pacific likely to be of use in the proposed communication already spoken of; two of which are connected with the lagoons of Nicaragua and Leon, and a third with the Costa Rica from Puente d'Arena to the town of A la Huela.

Real Lejo, the one nearest to Leon, is the most detached from the communication with the river San Juan and the lagoon of Nicaragua. The port of Real Lejo is distant fourteen leagues from the town of Leon. An excellent road, over a level ground, connects the two towns. The harbour is capable of giving security to all classes of vessels, even to line-of-battle ships; and the town contains about one thousand inhabitants; there is a custom-house, governor, mayor, &c.

San Juan del Sul is the nearest port to the town of Nicaragua, distant fourteen leagues from it. It is not inhabited; but the port is perfectly secure, with four fathoms water close to the shore, and is considered a very healthy situation. The road to Nicaragua passes through a flat country, where, consequently, a canal may be easily cut. It is said that the central government of America has it in contemplation to open a communication between the Atlantic and Pacific at this point.

Puente d'Arena is a safe, commodious port in the Gulf of Nicoya, on the Pacific; from whence a direct intercourse is maintained with all parts of the Costa Rica, by a road twenty-six leagues in length. As a communication is just establishing from the chief town of the province of Costa Rica with the river San Juan, by a navigable branch called the Sarapiqui, which the steam-boats would pass in their way from the port of San Juan to Nicaragua; and as this road may become of importance, and be preferred as a route to the Pacific, instead of that by the lagoon of San Juan de Nicaragua, as in this way the shoals,

which are the greatest obstacles to the navigation of that river, would be avoided, this road is particularly mentioned here. It is at present merely a mule-track, but may, at a very small expense, be made good, as the country is particularly favourable for that purpose. The passage by the Costa Rica has a decided advantage over that of Panama, as all the commerce carried on between Chorrera or Panama, and Chagres, is done by mules, purchased in the province of Costa Rica; indeed, so abundant are they here, that should the road from A la Huela to Puente d'Arena become of importance, one thousand might be hired in a day, in and about the town of A la Huela alone.

From Guatemala, the capital of central America, to Cartago Interior, in Costa Rica, is a distance of four hundred leagues; the road connecting them passes through most of the towns of importance in that district, and is situated near the shores of the Pacific.

The lagoon or lake of Nicaragua is an inland sea, of one hundred and twenty-three miles in length, and forty in breadth in its widest place, without narrowing much at either end. It is interspersed with islands, some of which are of great height. On this inland sea, the Spaniards kept up a marine, consisting of a brig-of-war of fourteen guns, and several schooners or gun-boats, when the Americas belonged to them; its magnificence and capability of navigation may therefore be easily conceived. An English merchant, by the name of Shepherd, has also a schooner of forty tons commercially employed at this moment upon the lake; and as a proof of the quantity of water in the river San Juan during the freshes, this schooner, which was built at Jamaica, was carried to the lake through the river by merely removing her keel, and replacing it when she arrived on the lake.

The principal towns on the lake are Grenada and Nicaragua, the latter nearest the entrance of the river. Grenada is a city of importance: it contains eight thousand inhabitants, has fine streets and public edifices, among which are five churches. Its principal exports are cocoa, indigo, Nicaragua wood, and hides. The vessels that carry on its commerce are flat-bottomed, and lade and unlade on the beach in front of the town.

The town of Nicaragua contains more inhabitants than Grenada, but its trade is not so flourishing, although the cocoa and indigo are said to be better and more abundant in the surrounding district. The advantage on the side of Grenada is from its better position, as connected with Guatemala. Nicaragua is about forty leagues from the mines of Real del Monte and Agua Cati.

The lagoon of Leon or Matiares is about thirty-five miles long, and fifteen broad in its widest part; it is connected with the lake of Nicaragua, but not navigably, as there is a large fall running quite

across it: but this might be obviated by cutting a communication between the lakes, as the ground between them in some places is quite flat. Leon was formerly the principal city in Nicaragua, and the capital of the province, being then reckoned to contain fifty thousand inhabitants; but it is now partially destroyed by the revolutions that have taken place within its walls; and since Nicaragua and the Costa Rica have been united with Guatemala and San Salvador, and called the central government of America, Leon has lost its metropolitan influence. Should a flourishing commerce however arise by the communication anticipated by the proposed cut, it may again resume its place, as all its edifices and streets remain, with the exception of a few houses destroyed, and others going to ruin for want of being inhabited.

The great road before alluded to, running from Guatemala to Cartago, passes through the towns of San Anna Grande, San Salvador, San Miguel, San Carlos; whence it crosses the Bay of Fonseca, and so onward through Pueblo Viejo, Chinandega, Leon, Pueblo Nuevo, Margoroti, Matiares, Managua, Massaya, Grenada, Nicaragua, San Juan a Casti, Esparsa, A la Huela, Heredia, San José, and Cartago. There is a peculiarity about Massaya, which is, that it is entirely inhabited by Indians, several of whom are people of considerable information, educated at the colleges of Panama and Guatemala, during the Spanish dominion; but these colleges are now, like things of greater consequence, neglected and destroyed.

Three annual fairs are held at the town of San Miguel: that of La Paz, which takes place on the 20th of November, is the largest; it being estimated that at least five hundred thousand dollars are spent at each fair. It is the mart for everything in estimation in the Americas, and is attended by merchants from all the republics, being looked to in this country as arbitrating the commerce of the times, by regulating the prices—as that of Leipsig in Europe. When it is considered that this great road passes from town to town in a direct line—that a communication is kept up by post and by arrieros—and that the canal proposed to San Juan del Sul intersects it—the commercial advantages must indeed be great; and when also is contemplated the favourable position of San Juan del Sul, with regard to San Blas, Acapulco, and the Mexican ports on the Pacific, it all speaks in terms most favourable as to San Juan del Sul being the most desirable position for the passage to take place at. Let us also descend the river of San Juan —pass by its falls—arrive, in our way down, at the Sarapiqui, leading to the Costa Rica—and remember that a road is making, on a most extensive scale, from this point; let us recollect further that this road leads to a rich mining district, and through the populous and rich town of San José del Interior, containing eighteen

thousand inhabitants, as well as through A la Huela, nearly equally populous; and that this place is in direct communication with the Pacific, from whence a vast commerce is carried on by mules.—I say again, when all this is contemplated, of what importance does this river of San Juan become, and how few obstacles are there to contend with to establish it as a most flourishing entrepôt,—nothing but the shoals, which are at most seasons passable. The river and lake are at present navigated by boats, which are called bungoes (or, as we should call them, river-barges), of about two tons burthen. I have seen a string of twelve or fourteen of these boats arrive in one day at San Juan de Nicaragua, from Grenada, laden with hides, indigo, money, &c. If at this period such is the case, and that these boats can go and return in twelve days, how much would that communication be facilitated by establishing one steam-boat below the falls, and one above it, for the purpose of towing these boats. If such a commerce is now carrying on, to what an extent might it be pushed, with small capital and little risk, by establishing two steam-boats (such as are gone to Africa with Lander, made of iron) to tow these river-barges! The establishment for the repair of these vessels ought to be on the healthiest part of the river; and let their arrival at the port of San Juan, and departure, be made without detention. If the stream is not strong enough to impede the passage of the bungoes at present, there can be little doubt of the success attendant on the introduction of steam-boats.

The port of San Juan de Nicaragua is equally healthy with Chagres, and a decidedly superior place to lie at, as all classes of merchant-ships might rendezvous at it, the water being so smooth that the bungoes might go at once alongside the ships and discharge their cargoes. But laying aside the comparison between the passage to the Pacific by Chagres and this, there can be no reason why Central America and Columbia should not both have a transit to the Pacific; as that of Guatemala might be placed in connexion with the ports on the Mexican coast, and to the northward as far as California, united as it would be with all the internal commerce of the central government; whilst Columbia, by the harbour of Panama, would communicate with Guayaquil, Lima, and all the ports on the Pacific to the southward of it, even as far as Valparaiso. Even at present, merchants are in the habit, both English and American, of sending vessels with cargoes to the Pacific, round Cape Horn, disposing of their cargoes there, and sending the goods or money obtained in exchange by the Grenada bungoes, to the port of San Juan de Nicaragua, as a readier mode of communication with Europe and the United States vessels, in correspondence with them, being there ready to receive them on board, and to carry them to their destined ports.

were Sohilies, the other an Arab. I have little doubt but we should have succeeded, he (the sultan) having great influence over the Gaullas and other tribes inland of them, through whose countries we should have had to pass. Having resided two years at Mombas, I was well known to the Whaneekas and the Merremengows, two numerous tribes inland of Mombas, and also to some of the Gaullas. The Whaneekas inhabit the surrounding country for many miles; they are very treacherous to strangers, but when acquainted, every reliance may be placed on them. Some of their villages are large, forming an open square, but with little regularity; in this square they have a house tastefully fitted up, and which I have always seen used for drinking in, but whether it was also used for religious ceremonies, I never inquired. Circumcision is a general thing with them. Their beverage is the sap of the cocoa-nut tree, and another palm, which is extracted into calabashes, and kept in the sun to ferment; they partake most freely of it, which causes drunkenness, a vice the Whaneekas are much addicted to. Their lands are little cultivated; cassada is the chief produce of their grounds, although the country is capable of producing any thing: it resembles a park, with clusters of trees here and there, as if planted by art. Small pieces of water are also seen, to which the natives drive their cattle always before sunset, previous to taking them to the pens—the country being so very much infested with all kinds of wild animals, that they would be destroyed if left out; even the natives retire to their huts before dark. They never bury their dead, but place them outside the huts, and in the night the hyenas take them away. They have another peculiarity,—whenever they kill their cattle for food, they either stone or beat the animal to death, so as not to shed the blood. Their dress is a blue cotton wrapper round the waist, hanging down as far as the knees, with another thrown over the shoulder: their implements of war are straight swords (of their own manufacturing) and bows and poisoned arrows, with which they are very expert. Their traffic is in ivory, gum copal, honey, bees-wax, and cattle: in exchange for which they get cloths, beads, and wire—the two latter articles they carry to the tribes inland, named Merremengows. These last are of small stature, well made, and active, perfectly black, but have not in the least the negro appearance; their hair is rather short and curly; they are very friendly and good humoured. Their implements of war are the same as those of the Whaneekas, and are very expertly used by them. Their dress consists of the skins of wild animals, carelessly thrown over the left shoulder. The chief ornament of the men is brass wire twisted round their arms when young, above the elbow. The women have bead ornaments round their waist and in front; also beads strung on the hair, all over their heads. The

traffic of the Merremengows is in ivory, skins, rhinoceros' horn, &c.; which they exchange for wire and beads. Their religion I am not acquainted with; but they are not circumcised.

A CATALOGUE OF WOODS.

Sohilie Name.	Diameter. in.	Height. feet.	Use.
Mungorule	18	19	Bedsteads, boxes, &c.
Mupingo (crooked)	10	13	Bedsteads, &c.
Monyonvouro	18	19	Ship-building.
Mechano	19	14	Doors, &c.
Mowoula	36	60	Ship-building.
Mosendee	22	50	Masts for dows.
Monamage	40	26	Ship-building.
Mananingya	26	30	Ship-building, &c.
Mucongarcharlee	28	22	Doors, &c.
Mocungue	24	28	Ship-building.
Mulelana	7	12	Rafters, &c.

VI.—*Memorandum respecting the Pearl Fisheries in the Persian Gulf.* Communicated by Colonel D. Wilson, late Resident in the Persian Gulf, &c.

As the pearls fished in this gulf are known and esteemed all over the world, it may be interesting to say something respecting the manner in which they are procured, and the wonderful extent and value of this single article of commerce, which produces the means of subsistence for nearly the whole population of the Arabian shore of this sea. The land produces little else besides dates, but they even are not in sufficient quantities to support the whole of the population; supplies therefore must be imported. A handful or two of dates and a little salt fish, with occasionally a little rice or wheat, washed down with brackish or bitter water, forms the general food of the Arabs of the coast.

The most extensive pearl-fisheries are those on the several banks not far distant from the island of Bharein; but pearl-oysters are found, more or less, along the whole of the Arabian coast, and round almost all the islands of this gulf. Such as are fished in the sea near the islands Kharrack and Borgo, contain pearls which are said to be of a superior colour and description, from being formed of eight layers or folds, whilst others have only five: but the water is too deep to make fishing for them either very profitable or easy there; besides, the entire monopoly of the fishery is in the hands of the Shaik of Bushire, who seems to consider these islands as his immediate property.

The fishing season is divided into two portions, the one called the short and cold, the other the long and hot; what is called the short or cold fishery is common everywhere. In the cooler weather of the month of June, diving is practised along the coast in shallow water; and it is not until the intensely hot months of July, August, and half of September, that the Bharein banks, above mentioned, are much frequented. The water on them is deeper (about seven fathoms), and the divers are much inconvenienced when that element is cold; indeed they can do little when it is not as warm as the air, and it frequently becomes even more so in the hottest months of the summer, above-mentioned.

When they dive, they have a small piece of horn that compresses the nostrils tightly and keeps the water out; they stuff their ears with bees-wax for the same purpose. They also attach a net to their waists, to contain the oysters; and aid their descent by means of a stone, whilst they hold by a rope attached to a boat, and shake it when they wish to be drawn up. From what I can learn, two minutes may be considered as rather above the average time of their remaining under water; and the employment of diving, although severe labour, and very exhausting at the time, is not considered very injurious to the constitution,—even old men practise it; and a person usually dives from twelve to fifteen times in a day in favourable weather, but when it is not so, three or four times only. The work is performed on an empty stomach. When the diver becomes fatigued, he goes to sleep, and does not eat until he has been refreshed by doing so.

At Bharein alone, the annual amount produced by the pearl-fishery may be reckoned at from 1,000,000 to 1,200,000 German crowns (the coin current there), or 200,000*l.* for the first sum: if to this the purchases made by the Bharein merchants and agents at Aboothatu, Sharga, Rasub Khymah, &c. be added, which may amount to the value of half as much more, there will be a total of about 1,500,000 German crowns, or 300,000*l.*; but this is calculated to include the whole pearl trade of this gulf, for it is believed that all the principal merchants of India, Arabia, and Persia, who deal in this article, make their purchases through agents at Bharein. I have not admitted in the above estimate much more than *one-sixth* of the amount some native merchants have stated it to be, as a good deal seemed to be matter of guess or opinion, and it is difficult to get at facts; my own estimate is in some measure formed on the estimated profits of the small boats. But even the sum which I have estimated is an enormous annual value for an article found in other parts of the world as well as here, and which is never used, in its best and most valuable state, as anything else than an ornament. A considerable quantity of the seed pearls is used throughout Asia, in the composition of majoons or elec-

tuaries, to form which all kinds of precious stones are occasionally mixed, after being pounded,—excepting indeed diamonds, which are considered (from being so hard) as utterly indigestible. The majoon, in which there is a large quantity of pearls, is much sought for, and valued on account of its supposed stimulating and restorative qualities. But I presume, that pearls are nothing more than sulphate of lime; and that Cleopatra's draught was a luxury only in the imagination.

The Bharein pearl fishing-boats are reckoned to amount to about fifteen hundred; and the trade is in the hands of merchants there, some of whom possess a considerable capital. They bear hard on the producers or fishers, and the man who makes most fearful exertions in diving, hardly has food to eat. The merchant advances some money to the fisherman, at cent. per cent., and a portion of dates, rice, and other necessary articles, all at the supplier's own price; he also lets a boat to them, for which he gets one share of the gross profits of all that is fished; and, finally, he purchases the pearls nearly at his own price, for the unhappy fishermen are generally in his debt, and therefore at his mercy.

The following may be reckoned the common mode of proceeding:—five ghowass or "divers," and five syebor or "pullers up," agree to take a boat together: the capitalist may probably already have lent these ten men about two hundred and fifty crowns to support their families during the former part of the year; perhaps they were unfortunate in the fishery of last year, and gained little. It is supposed they may gain in the current year, what the capitalist, in his generosity, may value and receive for one thousand German crowns, which is considered fair success, perhaps above the common for a season. The division would be as follows:—

Total value acquired,—German crowns	1000
Deduct first one-eleventh to the capitalist for the boat . .	90
	910
Secondly, 250 crowns, advanced generally in food, &c.	250
	660
Thirdly, 100 per cent. on 250 crowns advanced .	250
	410
Fourthly, 5 crowns from each fisherman, paid as a tax to the shaik or chief of the island . .	50
Balance . . .	360

to be divided among the ten fishermen, leaving thirty-six German crowns to each.

If the fishermen be unlucky, or the season be bad, they may not, as is sometimes the case, realize the sum expended, and must then irretrievably get in debt, becoming thereby for ever at the mercy of the rapacious capitalist; others, again, may be fortunate in getting a large draught of valuable pearls, and thus rise into capitalists themselves. Occasionally, the oysters are brought on shore before being opened, and sold as a gambling venture; but they are generally opened at sea, and the pearls taken out. The largest shells are preserved; many are from six to nine inches in diameter, and are valuable on account of the mother-of-pearl with which they are lined. The oyster itself is never eaten even in a country where food is so scarce.

It is not always on the spot where the article is produced that it is easiest to be procured, or, when so, to be had cheapest, or of the best quality. In most places engagements, of a nature something similar to those mentioned above, are made; and the produce is thus forestalled generally for a foreign market before it is actually acquired. Individuals, who are not merchants, are always made to pay very dearly for the liberty of selecting things of the first quality, as taking them away diminishes the general merchantable estimation of produce; and men who deal in the rough and wholesale will not, without a considerable bribe, thus reduce the value of their goods below the common level. This may account for more being demanded from individuals making selections for fine pearls here, than they probably could be bought for in London. Indifferent and bad pearls are abundant and cheap; and they are used in great profusion in embroidering both the dresses of women and men in Persia. A blue velvet upper garment, tastefully embroidered in pearls, has a magnificent appearance. But, respecting the larger and more valuable pearls, what would pass current among eastern nations as good and suitably arranged, as to shape, size, and water, would be rejected in Europe as intolerably mixed and utterly ill-assorted. There is the same difference in the estimation of flaws, and the "water" in stones and jewels. But, indeed, want of precision and an indistinctness, both in the perception of ideas and their delivery, is more apparent among Asiatics in general than Europeans. Individuals of the eastern and western quarters of the world might all mean to speak the truth, but how differently composed would the description of anything by a Persian, an Arab, or an Indian be, from that of an Englishman!

VII.—*On the Construction of the Map of the Indus*,—p. 118. Communicated by Lieutenant Alex. Burnes, E.I.C.S.*

A "Map of the Indus and Punjab Rivers from the Sea to Lahore," requires some notice explanatory of its construction, and I have to offer the following observations on that subject.

The river Indus, from the southern direction in which it flows in its progress to the ocean, presents few difficulties to the surveyor, since an observation of latitude serves to fix the daily progress in the voyage, and its comparatively straight course admits of easy delineation. The map, consequently, rests on a series of observations by the stars, taken each night. I should have preferred altitudes of the sun; but, with a people so suspicious as we encountered, it was impossible to use an instrument openly in daylight; and I should have required to halt the fleet twice to procure equal altitudes, since the sun was south of the equator during the voyage. Many of the large places, such as Tatta, Sehwun, Ooch, Mooltan, &c. &c., where we necessarily halted, have been laid down from a mean of eight or ten stellar observations.

The longitude and general delineations in the curvature of the river rest on a minute protraction of its turnings carefully observed every half-hour, and sometimes oftener, with the approved compass by Schmalcalder. The attention given to this important portion of the undertaking may be imagined, when I state that my field-books exhibit, on an average, twenty bearings each day, during sunrise and sunset. I was early enabled to rate the progress of the boats through the water, by timing them on a measured line along the bank, and apportioned the distance to the hours and minutes accordingly. We could advance, I found, by tracking or being pulled by men, at one and a half miles an hour; by gentle and favourable breezes, at two miles; and by violent winds, at three miles an hour; while any great excess or deficiency was pointed out by the latitude of the halting-place for the night.

The base on which the work rests is the towns of Mandivee and Curachee,—the one a sea-port in Cutch, and the point from which the mission started; the other, a harbour, in sight of the western mouth of the Indus, which we saw before entering the river. Mandivee stands in the latitude of 22° 50′, and Curachee in 24° 56′ north; while their longitudes are respectively 69° 34′ and 67° 19′ east, as fixed in 1809, from the chronometers of the Sinde mission, by Captain Maxfield.

Assuming these points as correct, the line of coast interme-

* Returned to England since the Memoir, p. 118, was printed.

diate to them has been laid down from my own map of Cutch; while that of Sinde rests on observations of the sun's altitude at noon, and the boat's daily progress, determined by heaving the log hourly. We sailed only during the day; and at all times along shore, often in a small boat, and were attended by six or eight pilots who had passed their lives in the navigation of these parts.

The great difference which will be observed in the topography of the mouths of the Indus from what is shown in all other maps will no doubt arrest attention: but it is to be remarked, that I impeach the correctness of no former survey, since the river has been professedly laid down in this part of its course from *native information*, and I can bear testimony to the correctness of such portions of the Indus as were actually traversed by the mission of 1809. From the jealousy of the Government of Sinde, we had to pass up and down the coast no less than five times, which gave ample opportunities to observe it; and I have a strong fact to adduce in verification of the chart as it now exists. On the third voyage we ran down so low as the latitude of 20° 30′ N., and were out of sight of land for six days. At noon, on the last day (17th March), while standing on a due northerly course, I found our latitude to be 23° 50′, a few miles below that embouchure of the river, which I had resolved to make, and immediately desired the pilots to steer a north-easterly course for the land. We closed with it at sunset, a couple of miles above Hujamree, at the very mouth of the Indus I wished to enter. At daylight, we had had no soundings in fifty fathoms; at seven A.M., we had bottom at forty-two fathoms; and at eleven, in thirty-four. By two in the afternoon, we were in twenty-one fathoms; and at dusk, anchored, in twelve feet of water, off Reechel, having sighted the land at half-past four.

In delineating the Delta of the Indus below Tatta, I have not only had the advantage of sailing up a branch of the river to that city, but likewise approached it on land by one route, and returned by another. I also ascended the Pittee, or western mouth of the Indus, for thirty miles. The opposition experienced from the Sinde government gave rise to these variations of route; they long tried to impede our progress, but the result of their vacillation has happily added to our knowledge of their country, in a degree which the most sanguine could not have anticipated. In addition to my own track, I have added that of the Sinde mission, from Curachee to Hyderabad, and thence to Lueput, in Cutch. My own surveys in Cutch, which extend high up the Koree or eastern branch of the Indus, together with every information, compel me to place the Goonee or Phurraun River (which is the name for the Koree above Ali Bunder) in a more westerly longitude than in the maps

hitherto published. Sindree and Ali Bunder lie north of Nurra, in Cutch, so that the river cannot extend so far into the desert as has been represented.

From Hyderabad upwards, and I may add, in all parts of the map, the different towns rest on the latitudes as determined by the sextant. Most of them are in a higher parallel than in the maps; but it was satisfactory to find, on reaching Ooch, that the longitude of that place, as taken from my own protraction, nearly coincided with that which had been assigned to it by Mr. Elphinstone's surveyors, who must have fixed it from Bhawulpoor. This was not the case with Bukkur: but as the latitude of that place was twenty-two minutes below the true parallel, I have reason to be satisfied with the result above stated. I likewise found, that the Indus receives the Punjab rivers at Mittun, in the latitude of 28° 55′, instead of 28° 20′ N., as given in the map of the Cabool mission; but no one can examine that document without acknowledging the unwearied zeal of its constructor (the late Lieutenant Macartney), and wondering that he erred so little when he visited so few of the places he has fixed, and received his information from such sources.

The Punjab Rivers have been laid down on the same principle as the Indus. The Chenab (Acesines), which has been erroneously styled Punjnud, after it has gathered the other rivers, is very direct in its course; but the Ravee (Hydraotes), on the other hand, is most tortuous, and appears on the map in its present course, after a tedious navigation of twenty days. The latitude of its junction with the Chenab and that of the extreme point of the map, the centre of the city of Lahore, which stands in 31° 35′ 30″ N. and in 70° 20′ E. longitude, have materially assisted me in the task. I have also placed the confluence of the Jelum or Behut (Hydaspes), with the Chenab twelve miles above the latitude in which it has hitherto stood. My survey eastward terminates on the left bank of the Sutledge (Hesudrus), with the British cantonment of Loodeeana, which I find stands in 30° 55′ 30″ N. latitude. I have used the longitude of the latest and best map, and placed it in 75° 54′ E. I am not answerable for the portion of the river below Lodeeana, having merely given it to show the connexion of the Beeas (Hyphasis) and Sutledge with each other and the rest of the rivers.

On an inspection of the map above described, it will be seen that I have merely confined myself to the banks of the Indus and such other rivers as fell under my own eye. I could have added to it by native information, but this was not my object. I have inserted the route of the Cabool mission, because it crossed my own track, and filled up a portion of the map in a most satisfactory

manner. I considered it, from the outset, to be an object of paramount importance, to connect my own surveys with those of that mission, since it completes our knowledge of the Indus from Attok to the sea. Before concluding, I should add, that the figures* on the map denote the soundings of the rivers, which must be considered as at the lowest, from the season of the year they were navigated.

A few typographical errors have crept into the text of the Memoir published with the Map, of which the most remarkable are Leu for Sen, p. 129, l. 3; grain for gram, p. 129, l. 37; and Aoch for Ooch, p. 152, l. 10. It may be also worth observing, that the coin mentioned as having been found at Shorcote (p. 147), and supposed to have Sanscrit characters on it, has been since ascertained to be Bactrian, with a Greek inscription.

VIII.—*Notice of the Caribs in Central America.* Communicated by Colonel Don Juan Galindo, F.R.G.S. Dated Government House, Trugillo, 1833.

Though found in the Caribbean Isles by the Europeans on their first arrival in America, the Carib race is identical in outward appearance with the African negro. Conquered and dispersed, the only remnant of the Caribs occupied a portion of the island of St. Vincent, whence their whole population was brought by the British authorities, in 1796, and landed at Port Royal in Roatan, but a few months afterwards transported by the Spaniards to Trugillo. This port remained their parent settlement, though latterly, as their population increased, colonies of them spread round the shores of the Bay of Honduras; and particularly a town called Stan-creek, to the southward of Belize, composed of emigrants from hence, has risen into importance. The Caribs of Trugillo were unfortunately seduced last year to join a wild attempt of the royalists to overturn the present government of Central America, and their subsequent discomfiture has driven numbers of them hence, who have principally fled to Stan-creek, or scattered themselves along the Mosquito shore to the eastward. Though, in some respects, outwardly converted to the Catholic faith, the Caribs still preserve many of their ancient

* These figures could not be introduced in the reduced map; but may be referred to at the office of the Royal Geographical Society.

superstitions; and polygamy is very prevalent among them. They also use their peculiar language, though the generality are acquainted with English or Castilian, and sometimes both; and they are by no means incapable of profiting by education.

I subjoin a short vocabulary of the Carib tongue, which it must be supposed has affinity with some of the languages of Western Africa, from the evident similarity of the Caribs to the negroes of that continent; while the other aborigines of America are of a dark copper colour, with straight hair—excepting, so far as I have observed, the Guagiros; which latter race inhabit the northern shores of Colombia, from Riohacha to near the Bay of Maracaibo, and are perfectly black, with entirely straight hair.

CARIB VOCABULARY.

Sun	Wello.	Tree	Güegüe.
Moon . . .	Hati.	Black man . .	Méguero.
Stars . . .	Wuruguma.	Indian . . .	Idúdu.
Fire	Wat.	White man .	Baranagueri.
Water . . .	Duna.	Feet	Ugudi.
Sea	Barana.	A foot . . .	Abanawogudi.
Canoe . . .	Gureira.	Head . . .	Waichic.
Island . . .	Ubau.	Hand . . .	Wajap.
Hill	Wipú.		

I.	Abana.	VI. . .	Abanalajunaguni.
II.	Bíama.	VII. . .	Biamalajunaguni.
III.	Irwa.	VIII. .	Irwalajunaguni.
IV.	Bíamburi.	IX. . .	Biamburilajunaguni.
V.	Abanawajap.	X. . .	Sunwajap.

They count by their hands; and I cannot find that the numeration of their language goes beyond ten.

IX.—Extracts from the *Journal of a Residence in Siam, and Voyage along the Coast of China to Mantchou Tartary.* By Charles Gutzlaff. Canton. 1832.

Mr. Gutztaff has lately become known to the English reader by his Voyage along the Coast of China in the ship Amherst. Previously, he was three years a resident missionary in Siam; and, in 1831, made a coasting voyage thence, in a Chinese junk, to the Gulf of Pe-tchee-lee, for the recovery of his health. His Journal of this voyage, with prefatory notices of Siam, was pub-

lished first in the Chinese Repository; afterwards, in a separate form, at Canton: and the following extracts from it seem deserving of a place here.

"Siam has never received, so much as it ought, the attention of European philanthropists and merchants. It is one of the most fertile countries in Asia. Under a good government it might be superior to Bengal, and Bankok would outweigh Calcutta. But Europeans have always been treated here with distrust, and even insolence, if it could be done with impunity. They have been liable to every sort of petty annoyance, which would weary out the most patient spirit; and have been subjected to the most unheard of oppression. Some of them proposed to introduce some useful arts, which might increase power and riches, for instance, steam-engines, saw-mills, cannon founderies, cultivation of indigo and coffee; but with the exception of one Frenchman, their offers were all refused; and the latter had to leave the country in disgrace, after having commenced the construction of an engine for boring guns. When works for their benefit were accomplished, their value was lowered, in order to dispense with the necessity of rewarding European industry, and of thereby acknowledging the superiority of European genius.

"The natives of China come in great numbers to Siam from Chaouchow-foo, the most eastern part of Canton Province. They are mostly agriculturists; while another Canton tribe, called the Kih or Ka, consists chiefly of artisans. Emigrants from Tang-an (or Tung-an) district, in Fuhkeen province, are few, mostly sailors or merchants. Those from Hainan are chiefly pedlars and fishermen, and form perhaps the poorest, yet the most cheerful class. Language, as well as customs, derived from the Chaou-chow Chinese, are prevalent throughout the country. They delight to live in wretchedness and filth, and are very anxious to conform to the vile habits of the Siamese. In some cases when they enter into matrimonial alliances with these latter, they even throw away their jackets and trowsers, and become Siamese in their very dress. As the lax, indifferent religious principles of the Chinese do not differ essentially from those of the Siamese, the former are very prone to conform entirely to the religious rites of the latter; and if they have children, these frequently cut their tails and become for a certain time Siamese priests. Within two or three generations, all the distinguishing marks of the Chinese character dwindle entirely away; and a nation which adheres so obstinately to its national customs, becomes wholly changed to Siamese. These people usually neglect their own literature, and apply themselves to the Siamese. To them nothing is so welcome as the being presented by the king with an honorary title; and this generally takes place when they have acquired great riches, or have betrayed some of their own countrymen. From that moment they become slaves of the king, the more so if they are made his officers. No service is then so menial, so expensive, so difficult, but they are

forced to perform it; and in case of disobedience they are severely punished, and perhaps put into chains for their whole lives. Nothing, therefore, exceeds the fear of the Chinese,—they pay the highest respect to their oppressors, and cringe when addressed by them. Notwithstanding the heavy taxes laid upon their industry, they labour patiently from morning to night, to feed their insolent and indolent tyrants, who think it below their dignity to gain their daily bread by their own exertions. With the exception of the Hwuy Hwuy, or Triad society, implicit obedience is paid to their most exorbitant demands, by every Chinese settler.

"Great numbers of the agriculturists in Siam are also Peguans, or Mons (as they call themselves). This nation was formerly governed by a king of its own, who waged war against the Burmans and Siamese, and proved successful. But having eventually been overwhelmed alternately by Burman and Siamese armies, the Peguans are now the slaves of both. They are a strong race of people, very industrious in their habits, open in their conversation, and cheerful in their intercourse. The new palace which the king of Siam has built was principally erected by their labour, in token of the homage paid by them to the 'lord of the white elephant.' Their religion is the same with that of the Siamese. In their dress the males conform to their masters; but the females let their hair grow, and dress differently from the Siamese women. Few nations are so well prepared for the reception of the Gospel as this; but, alas! few nations have less drawn the attention of European philanthropists.

"There are also some Moors" (Hindus?) "resident in the country, who are styled emphatically by the Siamese *Kah*, strangers, and are mostly country-born. Their chief and his son Rasitty enjoy the highest honours with his Majesty; the former being the medium of speech whereby persons of inferior rank convey their ideas to the royal ear. As it is considered below the dignity of so high a potentate as his Siamese majesty to speak the same language as his subjects have adopted, the above-mentioned Moor-man's office consists in moulding the simplest expressions into nonsensical bombast, in order that the speech addressed to so mighty a ruler may be equal to the eulogiums bestowed upon Budha. Yet by being made the medium of speech, this Moor has it in his power to represent matters according to his own interest, and he never fails to make ample use of this prerogative. Hence no individual is so much hated or feared by the nobles, and scarcely any one wields so imperious a sway over the royal resolutions. Being averse to an extensive trade with Europeans, he avails himself of every opportunity to shackle it, and to promote intercourse with his own countrymen, whom he nevertheless squeezes whenever it is in his power. All the other Moor-men are either his vassals or in his immediate employ, and may be said to be an organized body of wily constituents. They do not wear the turban, and they dispense with the wide oriental dress: nor do they scruple even to attend at pagan festivals and rites, merely to con-

ciliate the favour of their masters, and to indulge in the unrestrained habits of the Siamese.

"In the capacity of missionary and physician, I came in contact with the Laos or Chans, a nation scarcely known to Europeans. I learnt their language, which is very similar to Siamese, though the written character used in their common as well as sacred books, differs from that of the Siamese. This nation, which occupies a great part of the eastern peninsula, from the northern frontiers of Siam, along Camboja and Cochinchina on the one side, and Burmah on the other, up to the borders of China and Tonquin, is divided by the Laos into Lau-pung-kau (white Laos), and Lau-pung-dam (black or dark Laos), owing partly to the colour of their skin. These people inhabit mostly mountainous regions, cultivate the ground, or hunt; and live under the government of many petty princes, who are dependant on Siam, Burmah, Cochinchina, and China. Though their country abounds in many precious articles, and, among them, a considerable quantity of gold, yet the people are poor, and live even more wretchedly than the Siamese, with the exception of those who are under the jurisdiction of the Chinese. Though they have a national literature, they are not very anxious to study it; nor does it afford them a fountain of knowledge. Their best books are relations of the common occurrences of life, in prose; or abject tales of giants and fairies. Their religious books in the Bali language are very little understood by their priests, who differ from the Siamese priests only in their stupidity. Although their country may be considered as the cradle of Budhism in these parts, because most of the vestiges of Samo Nakodum, apparently the first missionary of paganism*, are to be met with in their precincts; yet the temples built in honour of Budha are by no means equal to those in Siam, nor are the Laos as superstitious as their neighbours. Their language is very soft and melodious, and sufficiently capacious to express their ideas.

"The Laos are dirty in their habits, sportful in their temper, careless in their actions, and lovers of music and dancing in their diversions. Their organ, made of reeds in a peculiar manner, is among the sweetest instruments to be met with in Asia. Under the hand of an European master, it would become one of the most perfect instruments in existence. Every noble maintains a number of dancing boys, who amuse their masters with the most awkward gestures, while music is playing in accordance with their twistings and turnings.

"Although the Laos, generally, are in a low state of civilization, yet there are some tribes amongst their most inaccessible mountains inferior even to the rest of the nation. One of the most peaceful of these are the Kahs. The Laos, imitating the Siamese, are in the habit of stealing individuals of this tribe, and bringing them to Ban-

[* Samóna Godam (i. e. Holy Pastor), is one of the epithets of Budha.]

kok for sale. Hence I have been able to converse with some of the Kahs, who stated to me that their countrymen live peaceably and without wants on their mountains, cultivating just so much rice as is sufficient for their own use; and that they are without religion or laws, in a state of society not far superior to that of herding elephants. Nevertheless, they seem capable of great improvement, and under the hand of a patient minister of Christ, may be as much benefited by the divine Gospel, as have been the lately so savage inhabitants of Tahiti or Hawaii.

"Some Laos who were sent by their chiefs, a few years ago, with a Chinese mandarin from the frontiers of China, appeared a superior class of people, though speaking the same language as the other tribes. They have been greatly improved by their intercourse with the Chinese, to whose emperor they are accustomed to send regular tribute, by the hands of an ambassador.

"Amongst the various races of people who inhabit Siam, there are also Kamehs or natives of Camboja. This country, situated to the south-east of Siam, is doubtless of higher antiquity than any of the surrounding states. The name Camboja occurs in the Ramayan and other ancient Hindoo poems; and in the earliest accounts of the country, Hindostan is mentioned as the cradle of Budhism. The language of the Cambojans differs materially from the Siamese, and is more harsh, but at the same time also more copious. Their literature is very extensive, and their books are written in a character called *Khom*, which is used by the Siamese only in writing their sacred Bali books. Most of their books,—and, with the exception of the national laws and history, perhaps all,—are in poetry. They treat generally on very trivial subjects, abound in repetitions, and are often extremely childish. I have seen a geographical work, written some centuries ago, which is more correct than Chinese works of the same kind.

"The Cambojans are a cringing, coarse people, narrow-minded, insolent, and officious, as circumstances require. They are, however, open to conviction, and capable of improvement. The males are many of them well-formed, but the females are very vulgar in their appearance. They are on equality with their neighbours in regard to filth and wretchedness, and are by no means inferior to them in laziness. They carry on scarcely any trade except in silk stuffs, which they fabricate themselves, although to do so is contrary to the institutes of Budha, because the life of the silk-worm is endangered during the process. To spend hours before their nobles in the posture of crouching dogs, to chew betel-nut, and to converse in their harsh language, are the most agreeable amusements of this people.

"Cambojah is watered by the Meinam-kom, a large river which takes its rise in Thibet. Like the southern part of Siam, the land is low and fertile, and even well inhabited. The principal emporium is Luknooi (so called by the natives), the Saigon of Europeans.

This place has many Chinese settlers within its precincts, and carries on, under the jurisdiction of the Cochinchinese, a very brisk trade (principally in betel-nut and silk), both with Singapore and the northern ports of China. The capital of Camboja is surrounded by a wall, erected in high antiquity. The country itself is highly cultivated, though not to the extent that it might be; for, as the people are satisfied with a little rice and dried fish, they are not anxious to improve their condition by industry.

"Hitherto Camboja has been the cause of much hostility between Siam and Cochinchina; each nation being anxious to extend its own jurisdiction over the whole country. Even so late as last year, a Cochinchinese squadron, collected at Luknooi, was about to put out to sea in order to defend the Cambojan coast against an expected descent of the Siamese; while at the same time the Cambojans are anxious to regain their liberty, and to expel the Cochinchinese their oppressors.

"Cochinchina or Annam, united by the last revolution with Tonquin, has always viewed Siam with the greatest distrust. Formerly the country was divided by civil contests; but when a French bishop had organized the kingdom and amplified its resources, under the reign of Coung Shung, Annam could defy the prowess of Siam. Even when the French influence had ceased, and the country had relapsed into its former weakness, the Cochinchinese continued to keep a jealous eye on Siam. The Siamese, conscious of their own inferiority, burnt, on one occasion, a large quantity of timber collected for ships of war, which were to have been built in a Cochinchinese harbour; they have also been successful in kidnapping some of the subjects of Annam; and the captives have mostly settled at Bankok, and are very able tradesmen. If the character of the Cochinchinese was not deteriorated by the government, the people would hold a superior rank in the scale of nations. They are lively, intelligent, inquisitive, and docile, though uncleanly and rather indolent. This indolence, however, results from the tyranny of government, which compels the people to work most of the time for its benefit. The Cochinchinese pay great regard to persons acquainted with Chinese literature. Their written language differs materially from their oral; the latter is like the Cambojan, while the former is similar to the dialect spoken on the island of Hainan.

"A country so rich in productions as Siam, offers a large field for mercantile enterprise. Sugar, sapanwood, beche de mar, birds' nests, sharks' fins, gamboge, indigo, cotton, ivory, and other articles, attract the notice of a great number of Chinese traders, whose junks every year in February, March, and the beginning of April, arrive from Hainan, Canton, Soakah, (or Soo-ae-kea, in Chaou-chow-Foo,) Amoy, Ningpo, Seang-hae, (or Shang-hae-heen, in Keangnan,) and other places. Their principal imports consist of various articles for the consumption of the Chinese, and a considerable amount of bullion. They select their export cargo according to the different

places of destination, and leave Siam in the last of May, in June, and July. These vessels are about eighty in number. Those which go up to the Yellow Sea, take mostly sugar, sapanwood, and betel-nut. They are called Pak-tow-sun (or Pih-tow-chuen, white-headed vessels,) are usually built in Siam, and are of about 290 or 300 tons, and are manned by Chaou-chow men, from the eastern district of Canton province. The major part of these junks are owned either by Chinese settlers at Bankok, or by Siamese nobles. The former put on board as supercargo some relative of their own, generally a young man who has married one of their daughters; the latter take surety of the relatives of the person whom they appoint supercargo. If any thing happens to the junk, the individuals who secured her are held responsible, and are often very unjustly thrown into prison. Though the trade to the Indian archipelago is not so important, yet about thirty or forty vessels are annually despatched thither from Siam.

"The whole coast of China is very well known to the Chinese themselves. As their navigation is only coasting, they discover at a great distance promontories and islands, and are seldom wrong in their conjectures. They have a directory; which being the result of centuries of experience, is pretty correct in pointing out the shoals, entrances of harbours, rocks, &c. As they keep no dead reckoning, nor take observations, they judge of the distance they have made by the promontories they have passed. They reckon by divisions, ten of which are about equal to a degree. Their compass differs materially from that of Europeans. It has several concentric circles; one is divided into four and another into eight parts, somewhat similar to our divisions of the compass; a third is divided into twenty-four parts, in conformity to the horary division of twenty-four hours, which are distinguished by the same number of characters or signs: according to these divisions, and with these signs, the courses are marked in their directory, and the vessel steered.

"After our passengers had all come on board, and the men were beginning to heave the anchor, it was discovered that the junk was overloaded; a circumstance which very frequently occurs, as every individual takes as many goods on board as he pleases. The captain had now to go back to Bankok; immediately on his return some of the cargo was discharged; and on June the 18th, we finally got under way. But we moved very slowly along the coast of the Siamese territory, attempting to sail only when the tide was in our favour. Proceeding eastward, we anchored near the promontory and city of Bamplasoi, which is principally inhabited by Chinese, and is celebrated for its fisheries and salt works. Here the Siamese have some salt inspectors, and keep the country in complete subjection. On the 19th we espied Kokram,—formerly the resort of pirates,—it is an island with a temple on its summit, in which is a representation of Budha in a sleeping posture. On arriving at this place, the Chinese generally

make an offering to this indolent idol. Those on board the richly-laden junks make an offering of a pig; poor people are satisfied with a fowl or duck; both which offerings are duly consumed by the sailors, after having been exposed a short time to the air. Concerning this practice, so repugnant to common sense, I made some satirical remarks, which met with the approbation of the sailors, who, however, were not very anxious to part with the offerings.

"After having passed Cape Liant, which in most charts is placed too far west by two degrees, we approached Chantibun, a place of considerable trade, and inhabited by Siamese, Chinese, and Cochinchinese. Pepper, rice, and betel-nut are found here in great abundance; and several junks, principally from Canton, are annually loaded with these articles. Ships proceeding to China might occasionally touch here, and trade to advantage.

"In the course of the voyage, I took observations regularly, and was requested by the captain and others to explain the method of finding the latitude and longitude. When I had fully explained the theory, the captain wondered that I brought the sun upon a level with the horizon of the sea, and remarked, "If you can do this, you can also tell the depth of the water." But as I was unable to give him the soundings, he told me plainly that observations were entirely useless, and truly barbarian. So I lost his confidence; which, however, was soon recovered when I told him that in a few hours we should see Pulo Way. Some time back this island was the retreat of Malay pirates; but at present it is the resort of only a few fishermen, and is wholly covered with jungle.

"With the utmost difficulty we arrived at the mouth of the Kang-kau-river, in Camboja, where there is a city which carries on considerable trade with Singapore, principally in rice and mats. The Cochinchinese, pursuing a very narrow policy, shut the door against improvement, and hinder, as far as they can, the trade of the Chinese. They think it their highest policy to keep the Cambojans in utter poverty, that they may remain their slaves for ever. Among the several junks at this place, we saw the "tribute bearer," having on board the Siamese ambassador. Though the Siamese acknowledge nominally the sovereignty of China, and show their vassalage by sending to Pekin tribute of all the productions of their own country, yet the reason of their paying homage so regularly is gain. The vessels sent on these expeditions are exempt from duty, and being very large, are consequently very profitable; but the management of them is intrusted to Chinese, who take care to secure to themselves a good share of the gains. Within a few years several of these junks have been wrecked.

"On July 4th, we reached Pulo Condore, called by the Chinese Kwun-lun. This island is inhabited by Cochinchinese fishermen. The low coast of Camboja presents nothing to attract attention; but the country seems well adapted for the cultivation of rice. When we passed this place, the Cochinchinese squadron, fearful of a descent

of the Siamese on Luknooi, were ready to repel any attack. Of eight junks loaded with betel-nut this year at Luknooi, and destined to Teen-tsin, only four reached that harbour; and of these, one was wrecked on her return voyage.

"From Pulo Condore the wind was in our favour, and in five days we passed the coast of Cochinchina. The islands and promontories of this coast have a very romantic appearance; particularly Padaran, Varela, and San-ho. Many rivers and rivulets disembogue themselves along the coast; and the sea abounds with fish, which seems to be a principal article of food with the natives. Hundreds of boats are seen cruising in every direction. The Cochinchinese are a very poor people, and their condition has been made the more abject by the late revolution. Hence they are very economical in their diet, and sparing in their apparel. The king is well aware of his own poverty and that of his subjects, but is averse to opening a trade with Europeans, which might remedy this evil. The natives themselves are open and frank, and anxious to conciliate the favour of strangers.

"On the 10th of July we saw Teen-fung, a high and rugged rock. The joy of the sailors was extreme, this being the first object in their native country which they espied. Teen-fung is about three or four leagues from Hainan. This island is wholly surrounded by mountains, while the interior has many level districts where rice and sugar are cultivated. There are aborigines not unlike the inhabitants of Manilla, who live in the forests and mountains; but the principal inhabitants are the descendants of people who, some centuries back, came from Fuhkeen; and who, though they have changed in their external appearance, still bear traces of their origin preserved in their language. They are a most friendly people, always cheerful, always kind. In their habits they are industrious, clean, and very persevering. To a naturally-inquisitive mind, they join love of truth, which, however, they are slow in accepting. The Roman Catholic missionaries very early perceived the amiability of this people, and were successful in their endeavours to convert them; and to this day many of the people profess to be Christians, and seem anxious to prove themselves such.

"Hainan is, on the whole, a barren country; and with the exception of timber, rice, and sugar (the latter of which is principally carried to the north of China), there are no articles of export. The inhabitants carry on some trade abroad; they visit Tonquin, Cochinchina, Siam, and also Singapore. On their voyage to Siam, they cut timber along the coasts of Tsiompa and Camboja; and when they arrive at Bankok buy an additional quantity, with which they build junks. In two months the junk is finished,—the sails, ropes, anchor, and all the other work, being done by their own hands. These junks are then loaded with cargoes, saleable at Canton or on their native island; and both junks and cargoes being sold, the profits are divided among the builders. Other junks, loaded with rice and bones, for manure, are usually despatched for Hainan.

"As soon as the first promontory of the Chinese continent was in sight, the captain was prompt and liberal in making sacrifices, and the sailors were not backward in feasting upon them. Great numbers of boats appeared in all directions, and made the scene very lively. We were becalmed in sight of the Lema islands, and suffered much from the intense heat. While there was not wind enough to ruffle the dazzling surface of the sea, we were driven on by the current to the place of our destination, Soakah, in Chaou-chow-Foo, the most eastern department of Canton province, bordering on Fuhkeen. 'This district is extensive and closely peopled. The inhabitants occupy every portion of it; and must amount, at a moderate calculation, to three or four millions. Its principal ports are Ting-hae (the chief emporium), Ampeh, Hae-eo, Kit-eo and Jeao-ping. The people are in general mean, uncleanly, avaricious, but affable and fond of strangers. Necessity urges them to leave their native soil, and more than 5000 of them go every year to the various settlements of the Indian archipelago, to Cochin-china, and to Hainan, or gain their livelihood as sailors. Being neighbours to the inhabitants of Fuhkeen, the dialects of the two people are very similar, but in their manners there is a great difference. This dissimilarity in their customs, joined to the similarity of their pursuits, has given rise to considerable rivalry, which frequently results in open hostility. But the Fuhkeen men have gained the ascendency, and use all their influence to destroy the trade of their competitors.

"Our sailors were natives of this district, and anxious to see their families after a year's absence. As, however, our junk had no permit, we could not enter the river of Soakah, but had to anchor in the harbour of Nan-aou (or Namoh), whilst passage-boats came in all directions to carry the men to their homes. Rice being very cheap in Siam, every sailor had provided a bag or two, as a present to his family. In fact, the chief thing they wish and work for is rice; their domestic accounts are regulated by the quantity of rice consumed; their meals according to the number of bowls of it boiled; and their exertions according to the quantity wanted. Every substitute for this delicious food is considered meagre, and indicative of the greatest wretchedness. When they cannot obtain a sufficient quantity to satisfy their appetites, they supply the deficiency of rice with an equal weight of water. Inquiring whether the western barbarians eat rice, and finding me slow to give them an answer, they exclaimed, "O, the steril regions of barbarians, which produce not the necessaries of life! Strange, that the inhabitants have not long ago died of hunger!" I endeavoured to show them that we had substitutes for rice, which were equal, if not superior to it, but all to no purpose; and they still maintained, that it is only rice which can properly sustain the life of a human being.

"It was the 17th of July when we anchored in the harbour of Namoh. The island from which this harbour takes its name is mostly barren rock, consisting of two mountains connected by a

narrow isthmus, in lat. 26° 28′ N.; long. 116° 39′ E. It is a military station, has a fort, and is a place of considerable trade, which is carried on between the people of Fuhkeen and Canton. The harbour is spacious and deep, but the entrance is difficult and dangerous.

"The entrance of the Soakah river is very shallow; but numerous small craft, principally from Ting-hae, are seen here. The duties, as well as the permit to enter the river, are very high; but the people know how to elude the mandarins, as the mandarins do the emperor. Ting-hae is a large place, tolerably well built, and inhabited principally by merchants, fishermen, and sailors. The productions of the surrounding country are not sufficient to maintain the inhabitants, who contrive various ways and means to gain a livelihood. There is no want of capital or merchants, but a great lack of honesty and upright dealing.

"On July 30th, we passed Amoy, the principal emporium of Fuhkeen province, and the residence of numerous merchants, who are the owners of more than 300 large junks, and who carry on an extensive commerce, not only to all the ports of China, but to many also in the Indian archipelago. Notwithstanding the heavy duties levied on exports and imports, these merchants maintain their trade, and baffle the efforts of the mandarins. They would hail with joy any opportunity of opening a trade with Europeans, and would doubtless improve upon that of Canton.

"On the following day favourable winds continued till we reached the channel of Formosa (or Tae-wan). This island has flourished greatly since it has been in the possession of the Chinese, who go thither generally from Tung-an in Fuhkeen, as colonists, and who gain a livelihood by trade, and the cultivation of rice, sugar, and camphor. Formosa has several deep and spacious harbours, but all the entrances are extremely shallow. The trade is carried on in small junks belonging to Amoy; they go to all the western ports of the island, and either return loaded with rice, or go up to the north of China with sugar. The rapidity with which this island has been colonized, and the advantages it affords for the colonists to throw off their allegiance, have induced the Chinese government to adopt restrictive measures; and no person can now emigrate without a permit. The colonists are wealthy and unruly; and hence there are numerous revolts, which are repressed with great difficulty, because the leaders, withdrawing to the mountains, stand out against the government to the very uttermost. In no part of China are executions so frequent as they are here; and in no place do they produce a less salutary influence. The literati are very successful; and people in Fuhkeen sometimes send their sons to Formosa to obtain literary degrees.

"Northerly winds, with a high sea, are very frequent in the channel of Formosa. When we had reached Ting-hae, in the department of Fuh-chow-Foo, the wind becoming more and more adverse, compelled

us to change our course; and fearing that stormy weather would overtake us, we came to anchor near the island of Ma-oh (or Ma-aou), on which the goddess Ma-tsoo-po is said to have lived. Here we were detained some time. The houses on the coast are well built; the people seemed poor, but honest; and are principally employed in fishing and in rearing gourds. Their country is very rocky.

"A few miles in the interior are the tea hills, where thousands of people find employment. The city of Foo-chow-foo, the residence of the governor of Fuhkeen and Chekeang, is large and well built. Small vessels can enter the river; the harbour of Ting-hae is deep, and very spacious. We saw there numerous junks laden with salt, also some fishing-craft.

"As soon as we had come in sight of the Chu-san (or Chow-shan) islands, which are in lat. 29° 22′ N., we were again becalmed.

"The city of Chu-san (or Chow-shan), situated in lat. 30° 26′ N., has fallen into decay, since it has ceased to be visited by European vessels; its harbour, however, is the rendezvous of a few native junks. Ning-po, which is situated a short distance westward of Chusan, is the principal emporium of Che-keang province. Native vessels belonging to this place are generally of about 200 tons burden, and have four oblong sails, which are made of cloth. These vessels, which are similar to those of Keangnan province, trade mostly to the north of China; copper cash, reduced to about one-half the value of the currency, is their principal article of export.

"About the 20th of August, we reached the mouth of the river Yang-tsze-keang, on the banks of which stands the city of Seanghae (Seang hae-heen), the emporium of Nanking, and of the whole of Keangnan province; and as far as the native trade is concerned, perhaps the principal commercial city in the empire. It is laid out with great taste; the temples are very numerous; the houses neat and comfortable; and the inhabitants polite, though rather servile in their manners. Here, as at Ning-po, the trade is chiefly carried on by Fuhkeen men. More than a thousand small vessels go up to the north several times annually, exporting silk and other Keangnan manufactures, and importing peas and medical drugs. Some few junks, owned by Fuhkeen men, go to the Indian archipelago, and return with very rich cargoes.

"It was with great difficulty that we reached the extremity of the Shantung promontory, in lat. 37° 23′ N.; and when we did so, the wind continuing unfavourable, we cast anchor at Le-to (Le-taou, an island in the bay of Sang-kow), where there is a spacious and deep harbour surrounded by rocks, with great shoals on the left side. This was on the 23d of August. There were several vessels in the harbour, driven thither by the severity of the weather. At one extremity of Le-to harbour, a small town is situated. The surrounding country is rocky, and productive of scarcely any thing except a few fruits. The houses are built of granite, and covered with sea-weeds; within they were very poorly furnished. The

people themselves were rather neat in their appearance, and polite in their manners, but not of high attainments. Though very little conversant with their written character, they nevertheless spoke the mandarin dialect better than I had ever before heard it. They seemed very poor, and had few means of subsistence; but they appeared industrious, and laboured hard to gain a livelihood. I visited them in their cottages, and was treated with much kindness, —even invited to a dinner where the principal men of the place were present. As their attention was much attracted towards me, being a stranger, I took occasion to explain the reason of my visiting their country, and amply gratified their curiosity. They paid me visits in return; some of them called me Se-yang-tsze, 'child of the western ocean;' and others a foreign-born Chinese; but the major part of them seemed to care little about the place of my nativity.

"Apples, grapes, and some other fruits we found here in abundance; and such refreshments were very acceptable after having lived for a long time on dry rice and salt vegetables. Fish also were plentiful and cheap. The common food of the inhabitants is the Barbadoes millet, called *kaou-leang;* they grind it in a mill, which is worked by asses, and eat it like rice. There were several kinds of the *leang* grain, which differed considerably in taste as well as in size.

"After staying several days at Le-to, we again got under weigh; but the wind being still unfavourable we proceeded slowly, and on the 2d of September came to anchor in the deep and spacious harbour of Shan-so. The town from which this harbour takes its name, is pleasantly situated, and its environs are well cultivated. The people were polite and industrious; they manufacture a sort of cloth, which consists partly of cotton and partly of silk; it is very strong, and finds a ready sale in every part of China. They are wealthy, and trade to a considerable extent with the junks which touch here on their way to Teen-tsin. Many junks were in the harbour at the same time with ours, and trade was very brisk. On shore refreshments of every description were cheap. The people seemed fond of horsemanship; and while we were there, ladies had horse-races, in which they greatly excelled. The fame of the English men-of-war had spread consternation and awe among the people here; and I endeavoured, so far as it was in my power, to correct the erroneous opinions which they had entertained.

"In the neighbourhood of Shan-so is Kan-chow, one of the principal ports of Shantung. The trading vessels anchor near the shore, and their supercargoes go up to the town by a small river. There is here a market for Indian and European merchandise, almost all kinds of which bear a tolerable price. The duties are quite low, and the mandarins have very little control over the trade. It may be stated that in general the Shantung people are far more honest than the inhabitants of the southern provinces, though the latter treat them with disrespect, as greatly their inferiors.

"On the 8th of September, we passed Ting-ching, a fortress situated

near the shore, on the frontiers of Chihle and Shantung provinces; it seemed to be a pretty large place, surrounded by a high wall. We saw some excellent plantations in its vicinity, and the country, generally, presented a very lively aspect, with many verdant scenes, which the wearied eye seeks for in vain, on the naked rocks of Shantung.

"The entrance of the Pei-ho (or White River), presents nothing but scenes of wretchedness; and the whole adjacent country seemed to be as dreary as a desert. While the southern winds blow, the coast is often overflowed to a considerable extent; and the country more inland affords very little to attract attention, being diversified only by stacks of salt, and by numerous tumuli which mark the abodes of the dead. The forts are nearly square, and are surrounded by single walls; they evince very little advance in the art of fortification. The people told me that when the vessels of the last English embassy were anchored off the Pei-ho, a detachment of soldiers—infantry and cavalry—was sent hither to ward off any attack that might be made. The impression made on the minds of the people by the appearance of those ships is still very perceptible. I frequently heard unrestrained remarks concerning barbarian fierceness and thirst after conquest, mixed with eulogiums on the equitable government of the English at Singapore. The people wondered how a few barbarians, without the transforming influence of the celestial empire, could arrive at a state of civilization, very little inferior to that of 'the middle kingdom.' They rejoiced that the water at the bar of the Pei-ho was too shallow to afford a passage for men-of-war (which, however, is not the case; when the south wind prevails, there is water enough for ships of the largest class); and that its course was too rapid to allow the English vessels to ascend the river. While these things were mentioned with exultation, it was remarked by one who was present, that the barbarians had 'fire-ships,' which could proceed up the river without the aid of trackers: this remark greatly astonished them, and excited their fears; which, however, were quieted, when I assured them that those barbarians, as they called them, though valiant, would never make an attack unless provoked, and that if the celestial empire never provoked them, there would not be the least cause to fear.

"The village of Ta-koo, near which we anchored, is a fair specimen of the architecture along the banks of the Pei-ho,—and it is only on the banks of the river, throughout these dreary regions, that the people fix their dwellings. The houses are generally low and square, with high walls towards the streets; they are well adapted to keep out the piercing cold of winter, but are constructed with little regard to convenience. The houses of all the inhabitants, however rich, are built of mud, excepting only those of the mandarins, which are of brick. The hovels of the poor have but one room, which is at the same time their dormitory, kitchen, and parlour. In these mean abodes, which to keep them warm are stopped up at all points, the

people pass the dreary days of winter; and often with no other prospect than that of starving. Their chief enjoyment is the pipe. Rich individuals, to relieve the pressing wants of the populace, sometimes give them small quantities of warm millet; and the emperor, to protect them against the inclemency of the season, compassionately bestows on them a few jackets. I had much conversation with these people, who seemed to be rude but hardy, poor but cheerful, and lively but quarrelsome. The number of these wretched beings is very great, and many, it is said, perish annually by the cold of winter. On account of this overflowing population, wages are low, and provisions dear; most of the articles for domestic consumption are brought from other districts and provinces; hence many of the necessaries of life—even such as fuel, are sold at an enormous price. It is happy for this barren region that it is situated in the vicinity of the capital; and that large quantities of silver—the chief article of exportation—are constantly flowing thither from the other parts of the empire.

"As soon as we were again ready to proceed, about thirty men came on board to assist in towing the junk; they were very thinly clothed, and seemed to be in great want; some dry rice that was given to them, they devoured with inexpressible delight. When there was not wind sufficient to move the junk, these men, joined by some of our sailors, towed her along against the rapid stream; for the Pei-ho has no regular tides, but *constantly* flows into the sea with more or less rapidity. During the ebb tide, when there was not water enough to enable us to proceed, we stopped and went on shore.

"The large and numerous stacks of salt along the river, especially at Teen-tsin, cannot fail to arrest the attention of strangers. The quantity is very great, and seems sufficient to supply the whole empire; it has been accumulating during the reign of five emperors; and it still continues to accumulate. This salt is formed in vats near the sea-shore; from thence it is transported to the neighbourhood of Ta-koo, where it is compactly piled up on hillocks of mud, and covered with bamboo mattings; in this situation it remains for some time, when it is finally put into bags and carried to Teen-tsin, and kept for a great number of years before it can be sold.' More than 800 boats are constantly employed in transporting this article,—and thousands of persons gain a livelihood by it, some of whom become very rich: the principal salt merchants, it is said, are the richest persons in the empire.

"Along the banks of the Pei-ho are many villages and hamlets, all built of the same material and in the same style as at Ta-koo. Large fields of Barbadoes millet, pulse, and turnips were seen in the neighbourhood; these were carefully cultivated and watered by women—who seem to enjoy more liberty here than in the southern provinces. Even the very poorest of them were well dressed; but their feet were much cramped, which gave them a hobbling gait, and compelled them to use sticks when they walked. The young and rising population seemed to be very great. The ass,—here a rather

small and meagre animal,—is the principal beast employed in the cultivation of the soil. The implements of husbandry are very simple, and even rude. Though this country has been inhabited for a great many centuries, the roads for their miserable carriages are few, and in some places, even a foot-path for a lonely traveller can scarcely be found.

"My attention was frequently attracted by the inscription *Tsew-teen*, "wine tavern," which was written over the doors of many houses. Upon inquiry I found, that the use of spirituous liquors, especially that distilled from *suh-leang* grain, was very general, and intemperance with its usual consequences very prevalent. It is rather surprising that no wine is extracted from the excellent grapes, which grow abundantly on the banks of the Pei-ho, and constitute the choicest fruit of the country. Other fruits, such as apples and pears are found here, though in kind they are not so numerous, and in quality are by no means so good as those of Europe.

"We proceeded up the river with great cheerfulness; the men who towed our junk took care to supply themselves well with rice, and were very active in their service.

"The scene as we approached Teen-tsin became very lively. Great numbers of boats and junks, almost blocking up the passage, and crowds of people on shore, bespoke a place of considerable trade. After experiencing much difficulty from the vessels which thronged us on every side, we at length came to anchor in the suburbs of the city, in a line with several junks lately arrived from Soakah, and were saluted by the merry peals of the gong. I had been accustomed to consider myself quite a stranger among these people, and was therefore surprised to see the eyes of many of them immediately fixed on me. My skill as a physician was soon put in requisition. The next day, while passing the junk on my way to the shore, I was hailed by a number of voices, as the *seen-sang*—"teacher," or "doctor;" and on looking around me, I saw many smiling faces, and numerous hands stretched out to invite me to sit down. These people proved to be some of my old friends, who a long time before had received medicines and books,—for which they still seemed very grateful. They lauded my noble conduct in leaving off barbarian customs, and in escaping from the land of barbarians, to come under the shield of the "son of heaven." They approved of my design in not only benefiting some straggling rascals (according to their own expression) in the out-ports of China, but in coming also a great distance to assist the faithful subjects of the celestial empire. They knew even that *seen-sang neang*, "the lady teacher" (my late wife), had died; and condoled with me on account of my irreparable loss."

"Kam-sea, a merchant of considerable property from Fuhkeen, and a resident at Teen-tsin, invited me to his house; this was on the 15th of the 8th moon, and consequently during the *Chung-tsew** festival.

* "That is, the festival of middle-autumn. This is a very great festival among the Chinese, and is observed partially throughout the whole month, by sending presents

Mandarins in great numbers hastened to the temples; priests dressed in black,—friars and nuns clothed in rags; and an immense number of beggars paraded the streets; and when I passed, filled the air with their importunate cries. All the avenues were thronged; and in the shops,—generally filled with Chinese manufactures, but sometimes also with European commodoties,—trade seemed to be brisk. The town, which stretches several miles along the banks of the river, equals Canton in the bustle of its busy population, and surpasses it in the importance of its native trade. The streets are unpaved, and the houses built of mud; but within they are well furnished, with accommodations in the best Chinese style. A great many of the shop-keepers, and some of the most wealthy people in the place, are from Fuhkeen; and the native merchants, though well trained to their business, are outdone by the superior skill of the traders from the south.

"As soon as the goods were removed to the warehouses, the resident merchants made their purchases, and paid immediately for their goods in sycee silver. These transactions were managed in the most quiet and honest manner, and to the benefit of both parties. On the sugar and tin very little profit was gained, but more than 100 per cent was made on the sapanwood and pepper, the principal articles of our cargo. European calicoes yielded a profit of only 50 per cent; other commodities, imported by Canton men, sold very high. On account of the severe prohibitions, there was a stagnation in the opium trade. One individual, a Canton merchant, had been seized by government; and large quantities of the drug, imported from Canton, could find no purchasers.

"The trade of Teen-tsin is extensive. More than 500 junks arrive annually from the southern ports of China, Cochinchina, and Siam. The river is so thronged with junks, and the mercantile transactions give such life and motion to the scene, as strongly to remind one of Liverpool. As the land in this vicinity yields few productions, and the Capital swallows up immense stores, the importations required to supply the wants of the people must be very great. Though the market was well furnished, the different articles commanded a good price. In no other port of China is trade so lucrative as in this; but no where else are so many dangers to be encountered. A great many junks were wrecked this year; and this is the case every season; and hence the profits realized on the whole amount of shipping are comparatively small. Teen-tsin would open a fine field for foreign enterprise; there is a great demand for European woollens, but the high prices which they bear prevent the

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of cakes and fruit from one person to another; but it is chiefly celebrated on the 15th and 16th days, on the 15th oblations are made to the moon, and on the 16th the people and children amuse themselves with what they call "pursuing the moon." The legend respecting this popular festival is, that an emperor of the Tang dynasty being led one night to the palace of the moon, saw there an assembly of nymphs, playing on instruments of music; and on his return, commanded persons to dress and sing, in imitation of what he had seen."

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inhabitants from making extensive purchases. I was quite surprised to see so much sycee silver in circulation. The quantity of it was so great, that there seemed to be no difficulty in collecting thousands of taels at the shortest notice. A regular trade with silver is carried on by a great many individuals. The value of the tael here varies from 1,300 to 1,400 cash. Some of the firms issue bills, which are as current as bank-notes in England. Teen-tsin, possessing so many advantages for commerce, may very safely be recommended to the attention of European merchants.

"By inquiries, I found that the people cared very little about their imperial government. They were only anxious to gain a livelihood and accumulate riches. They seemed to know the emperor only by name, and were quite unacquainted with his character. Even the military operations in Western Tartary were almost unknown to them. Nothing had spread such consternation amongst them as the late death of the heir of the crown, which was occasioned by opium smoking. The emperor felt this loss very keenly. The belief that there will be a change in the present dynasty is very general; but in case of such an event, the people of Teen-tsin would hear of it with almost as much indifference as they would the news of a change in the French government. The local officers were generally much dreaded, but also much imposed upon. They are less tyrannical here in the neighbourhood of the emperor, judging from what the people told me, than they are in the distant provinces. When they appear abroad it is with much pageantry, but with little real dignity. Indeed, I saw nothing remarkable in their deportment. No war junks nor soldiers were to be met with,—though the latter were said to exist. To possess fire-arms is a high crime, and the person found guilty of so doing is severely punished. Bows and arrows are in common use. There are no military stores;—but great stores of grain. The grain junks were at this season on their return home.

"The features of the inhabitants of this district more resemble the European than those of any Asiatics I have hitherto seen. The eye had less of the depressed curve in the interior angle than what is common and so characteristic in a Chinese countenance. And as the countenance is often the index of the heart, so the character of these people is more congenial to the European than is that of the inhabitants of the southern provinces. They are not void of courage; though they are too grovelling to undertake any thing arduous or noble, and too narrow-minded to extend their views beyond their own province and the opposite kingdom of Corea. They are neat in their dress; the furs which they wear are costly; their food is simple; and they are polite in their manners. The females are fair, and tidy in their appearance,—enjoy perfect liberty, and walk abroad as they please.

"The dialect spoken by the inhabitants of Teen-tsin abounds with gutturals; and for roughness is not unlike the language of the Swiss. The people speak with amazing rapidity, scarcely allowing time to trace their ideas. Though their dialect bears considerable resemblance to the

mandarin, yet it contains so many local phrases and corruptions of that dialect, as to be almost unintelligible to those who are acquainted only with the mandarin tongue.

"As we had arrived here so late in the season, just at the time when many of the junks were about leaving, it was necessary to shorten our stay, lest the Pei-ho, freezing up, should detain us over the winter. On the 17th of October, we began to move slowly down the river. Before leaving Teen-tsin, I received numerous presents, which were accompanied with many wishes for my welfare.

"We all had provided ourselves with furs; and were now at length proceeding to Leaou-tung, which is situated on the north of the gulf of Petchelee, on the frontiers of Mantchou Tartary. As Teen-tsin furnishes no articles for maritime exportation except the *tsaou*, or "date," the junks arriving here sell their cargo, and then proceed to some of the ports of Leaou-tung, where a part of their money is invested in peas and drugs. Though we had the current in our favour, we were a long time in reaching Ta-koo, and this because the sailors were fonder of gambling than of working the junk. At Ta-koo we were delayed several days, waiting for our captain and one of the passengers who were left behind. While at this place, I was invited by the port-master to dine with him on shore, but was prevented by the inclemency of the weather; several physicians also came on board, to consult with me in difficult cases, and received my instructions with much docility. After further delay, occasioned by a strong north wind, we finally got under weigh, October 28th, with a native pilot on board. We soon passed the Sha-loo-poo-teen islands; and having a very strong breeze in our favour, arrived at the harbour of Kin-chow, in the district of Fung-teen-foo, about fifteen leagues distant from Moukden, the celebrated capital of Mantchouria. The persons with whom I conversed about the place told me that it differed very little from the other cities in this district. The Mantchou Tartars who live hereabouts are numerous and lead an idle life, being principally in the employ of the emperor, either directly or indirectly. There seems to be but little jealousy between them and the labouring class of Chinese.

"There are two other harbours in this district, viz. Nankin (or southern Kin-chow, so called to distinguish it from the northern place of the same name), and Kae-chow. The latter is the most spacious and deep, and is capable of containing a large fleet. The harbour of Kin-chow is shallow, surrounded by rocks, and exposed to southern gales. Junks cannot approach within several miles of the shore, and all the cargo must be brought off in lighters. This country abounds with peas, drugs, and cattle of every kind. It is, on the whole, well cultivated, and inhabited principally by Mantchou Tartars, who in their appearance differ very little from the Chinese. The Fuhkeen men, here also, have the trade at their command; and a large number of junks annually visit the harbours of Leaou-tung.

"It was a long time after we arrived at Kin-chow before we could go on shore, on account of the high sea. It became generally known

among the inhabitants ere I left the junk, that I was a physician, and anxious to do good; and I was therefore very politely invited to take up my residence in one of the principal mercantile houses. It was midnight when we arrived on shore, and found a rich entertainment and good lodgings provided. The next morning crowds thronged to see me; and patients were more numerous than I had any where else found them, and this because they have among themselves no doctors of any note. I went immediately to work, and gained their confidence in a very high degree. There was not in the whole place, nor even within the circuit of several English miles, one female to be seen. Being rather surprised at such a curious fact, I learned on inquiry, that the whole female population had been removed by the civil authorities, with a view to prevent debauchery among the many sailors who annually visit this port. I could not but admire this arrangement, and the more especially because it had been adopted by heathen authorities, and so effectually put a stop to every kind of licentiousness.

"Kin-chow itself has very little to attract the attention of visitors; it is not a large or handsome place. The houses are built of granite (which abounds here); and are without any accommodations, except a peculiar kind of sleeping places, which are formed of brick; and so constructed, that they can be heated by fires kindled beneath them."

X.—*A Memoir on the Civilization of the Tribes inhabiting the Highlands near Dalagôa Bay.* (Abridged.) By William Desborough Cooley, Esq.

The interior of Southern Africa, from the country of the Hottentots to the equator, is occupied, we have reason to believe, a few spots excepted, by nations all speaking kindred tongues; and therefore, according to the ordinary system of ethnographical arrangement, of the same race. Those nations may be conveniently comprised under the designation of *Austral Ethiopians;* and of these, the *extra-tropical* family, or *Austral Ethiopians beyond the tropic*, are the proper objects of this paper.

It would be easy to show, not only that industry and civilization are more or less developed among those nations, on the highlands of the interior of Africa, but also that they were once much more manifest than they are at present. When the Portuguese settled in Angola and Mozambique, the illiberal spirit of their government, and the nature of their traffic, had the effect of degrading the native tribes which were in immediate contact with them; and, at the same time, of effectually repelling the more spirited and industrious inhabitants of the highlands: so that, where their vicious policy did not blast the germs of civilization, it caused their concealment.

Fortunately, however, a large portion of Southern Africa has been protected by physical circumstances (to which I shall advert hereafter) from this sinister influence; I mean, the country between the Cape colony and Inhamban or Cape Corrientes: and I shall now proceed to show that, from the character of its population, its climate, productions, and situation in the vicinity of the Cape colony, it holds out particular inducements to the enterprise of British merchants; that it unites probably more of the elements of a great and civilized community than any other portion of Southern Africa; and, it needs hardly to be added, that on these accounts it deserves to be immediately explored.

A few years ago, when the Amakosa (or Caffers, as they are commonly called), on the eastern frontiers of the Cape colony, first attracted attention, they were represented as a people highly interesting from their moral condition. Two distinguished travellers, Dr. Lichtenstein and Mr. Barrow, both acute observers, agreed in declaring them a *half-civilized people*, clearly emerged from savage life.

The Bechuána tribes, situated in the interior, about three hundred miles north of the Gariep or Orange River, are still superior to the Amakosa in arts and civilization*. The position of the latter, indeed, on an exposed frontier, has developed among them a martial character; while the Bechuánas, more remote from hostile attacks, take up arms rather as hunters or marauders, than as warriors. But their superior civilization is evident in their industry. They inhabit large towns, their houses are well-constructed and remarkable for their neatness; they cultivate the soil, and store their grain for winter consumption. In their physiognomy also they rise a degree above the Amakosa; their complexion is of a brighter brown, their features more European, and often beautiful.

As we proceed north-eastward from the country of the Batclapís, the most southern of the Bechuána tribes, along the elevated tract which limits on the west the basin of the Gariep or Orange River, we find the industry and civilization of the inhabitants increasing at every step. In the country of the Tammahas, near the town of Mashow, which has a population of at least ten thousand, Mr. Campbell saw fields of Caffer corn (*Holcus Sorghum*), of several hundred acres in extent. In another place he saw a tract of cultivated land which he supposed could not be included within a circumference of less than twenty miles†.

But among the Murútsi, whose chief town, Kurrichane or Chuani, is distant probably about one hundred and sixty geographical miles, north-east by east from Litákoo, the same traveller found a spirit of industry, and a progress in the arts, which appear to have surprised him.

The town of Kurrichane appeared to Mr. Campbell to be about four

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* Lichtenstein. Reisen im Südlichen Afrika, i., 404. Berl. 1811.

† Campbell's Second Journey, i., pp. 93, 177, 181. 1820.

times the size of Litákoo, the population of which he estimated at four thousand *. In the construction of their houses, many circumstances are observable, which mark a broad line between the Murútsi and their southern neighbours, in respect to proficiency in those arts which are most intimately allied to civilization. The fences encircling their houses are built of stone, without cement, but of masonry, in other respects, equal to that of Europe. The houses themselves are plastered and painted yellow; some of them are ornamented with pillars, carved mouldings, and well painted figures. The jars in which the corn is stored, are from six to ten feet in height and diameter, formed of clay, painted and glazed. The most scrupulous neatness reigns through the habitation. The Murútsi cultivate tobacco and the sugar-cane, in addition to beans, Caffer corn, millet, and other objects of Bechuána tillage. They are so rich in cattle, that the droves returning home in the evening extend two miles from the town †.

The Murútsi manufacture large quantities of iron and copper. They smelt and alloy the latter metal, draw it into fine wire, and make elastic chains of considerable beauty. Their iron is of so fine a quality as to be little inferior to steel. They supply their neighbours with knives, razors, iron implements of husbandry, &c. It is even probable that they have the art of casting iron, for at Dalagôa Bay the natives have cast-iron tobacco pipes, differing little in shape from our clay pipes, and obtained by them from an inland nation ‡; now the Murútsi are among the most expert of those nations in the art of working the useful metals, and as they are known to trade to Dalagôa Bay, there is a strong likelihood, at least, that the cast-iron pipes are of their manufacture. The Murútsi supply their southern neighbours with wooden ware, with bowls, carved spoons, &c.; and as the Batclapís were able to name to Mr. Campbell several handsome kinds of wood which grow in the country of the Murútsi, it may be fairly inferred, that the latter people display no less ingenuity and refinement in their manufactures of wood than in those of metal.

The arts, industry, and social order which are observed to increase progressively, as we advance north-eastwards from the Batclapís to the Murútsi, cannot be supposed to cease abruptly at the limits of the latter nation. Beyond the Murútsi, according to the accounts of natives, toward the north-east or east are the Maquaina, a numerous and powerful nation, equalling the Murútsi in industry, and far surpassing them in wealth and numbers §. They are known to all the southern nations, even to the Amákosa, who are at least five hundred geographical miles distant from them, but who describe them (under the name of Maquini) as the people from whom all other nations receive their iron and copper wares ||. The Murútsi and other southern tribes

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* Mr. Thompson supposed Litákoo to contain six, eight, or ten thousand inhabitants.—" Travels and Adventures in South Africa," i., pp. 168, 216. 1827.

† Campbell, i., pp. 220, 248. ‡ Communicated to me by Lieutenant Rozier.

§ They are called, by Lichtenstein, *Maquini*; by Burchell, *Makwins*; by Campbell, *Moquana* and *Baquana*; by Thompson, *Maqueans*; and by Philips, *Maquaina*.

|| Licht., i., 495.

obtain from the Maquaina, beads, the money of the country, which are brought to the latter people by the Mollaquam, who live near the great water (I presume towards Dalagôa Bay), or derived from commerce with the Mahalasely, a great nation situated to the north-east of the Maquaina, and who trade with a white people living near the great water, and speaking an unknown language *. By this description, it is evident that we must understand the Portuguese at Inhamban. Beyond the Mahalasely are said to be a half-white people, who are extremely savage †. These are the "Wild Men of the Woods," described by the Portuguese, and who are probably descended from the Moors, driven southward by them after the conquest of Sofâla ‡.

Now the information which the Murútsi communicate respecting the nations situated to the north-east of the Maquaina, deserves our particular attention. The Mahalasely (as well as the Mateëbeylai, a neighbouring nation) are of a brown complexion, and have long hair §. They wear clothes, ride on elephants, which they likewise use for draught, they climb into their houses, "and are gods ||." This last emphatic expression is usually applied to Europeans, with whom the Mahalasely are thus raised to a level. All the nations from the Mahalasely to the Murútsi inclusive, obviate the virulence of the small-pox by inoculating between the eyes ¶.

The various Austral-Ethiopian tribes, or nations south of Inhamban, habitually regard each other as members of the same family: they are, as they express it, *one people*, and, unless when wars disturb their harmony, they mingle together without fear or mistrust. Their young chiefs make distant journeys, confident of being hospitably received wherever they arrive. To this circumstance, and the commercial disposition of the Murútsi and their neighbours, it may be ascribed that their geographical information is so much more accurate and extensive than is usual among rude nations. The industry and commercial habits of the inland tribes are sufficiently matured to operate on opinion and to feel its reciprocal influence. Even among the Batclapís, who are less strenuous and ingenious than the Murútsi, an individual of industrious habits is commended and esteemed by all **. Mr. Campbell met a family, with all their property packed on oxen, travelling from the country of the Tammahas to that of the Murútsi, a distance of one hundred miles, to reap the harvest ††.

The Murútsi carry their manufactures, their copper ornaments, iron, and wooden wares to the Batclapís and other southern tribes; from whom they obtain in return, skins, ivory, and *sibilo*, or glittering iron ore, with which they powder their hair. These articles they

* Campbell, i., 240. † Philips, Researches in South Africa, ii., 154. 1819.
‡ Lieut. Rozier.
§ Campbell's First Journey, 216. 1825. Second Journey, i., 272, 308.
|| The Mucarangas and Amakosa make use of a similar expression. By the former, Europeans are called *Musungo*; by the latter, *Umlungo*; that is, Lords.
¶ Campbell, i., 163.
** Burchell, Travels in South Africa, ii., 555. †† Campbell, i., 283.

again carry north-eastward to the Maquaina, with whom they exchange them for beads and clothing. Thus the trade in which they are immediately concerned, probably extends from four to five hundred miles. At the chief towns, to which they resort, they have commercial agents, called *marts*, with whom they are allied by interest and bound in reciprocal obligations of friendship and hospitality*. The Mahalasely, whose civilization is so much vaunted by their southern neighbours, are said to carry their hospitality and encouragement of trade so far as to support, at the public expense, all strangers who enter their country†. They purchase great quantities of ivory, which they superstitiously anoint, and pretend to the Maquaina or Murútsi merchants (who readily believe them) that they eat it. This strange fiction is evidently intended to protect their monopoly of the trade with Inhamban.

The Murútsi, Maquaina, and Wankîtsi are said to trade with the Damaras on the western coast of Africa, and there can be little doubt that their northern and north-eastern neighbours, the Seketay, Bamangwatú, and Mahalasely maintain a commercial intercourse with the empire of Monomotapa. We are informed, that the beads with which the Portuguese on the Zambese carry on their trade with the natives are of three colours, viz., black, white, and blue‡; these are precisely the colours on which the Bachapins set a value; beads of any other hues are not considered by them as money§. Now this uniformity in the appreciation of a circulating medium, the value of which is altogether conventional, can be reasonably ascribed only to an active commerce pervading the countries in which it is observed. The Portuguese say, that ivory is brought from the Orange River to Zumbo, a trading town on the Zambese, four or five hundred miles from the sea‖; which account, stripped of misconstruction and erroneous inference, amounts to this, that a commercial intercourse exists between the nations dwelling among the sources of the rivers which discharge themselves into Dalagôa Bay, and those which are situated due north of them, near the Zambese. Thus it is evident, that the trade of the Austral Ethiopian nations may be traced from Dalagôa Bay on the eastern to Whale Bay on the western coast; and from Litákoo northwards to the Zambese. From Tête, on this river, the commercial route of the natives runs northwards, about one hundred and fifty miles, through the high country of the Maravis, and then turning to the north-west, intersects several rivers which flow towards the interior (probably, like the Zambese, to wind round afterwards to the eastern coast). Having pursued this direction about two hundred miles, the route turns westward to Angola. The trade, carried on by the natives in the interior of Africa is not, as some imagine, of recent origin.

The kindness and humanity of the natives of what is vaguely deno-

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* Campbell, i., 274. † Ibid. 308.
‡ Thomann. Reise und Lebensbeschreibung, 115. 1788.
§ Burchell, ii., 569. Red and yellow beads are preferred to blue on the coast.
‖ Bowdich, Discoveries of the Portuguese, 108.

minated the *Caffer Coast*, as displayed towards shipwrecked seamen, have often been the themes of just and warm commendation*. "They are very just," says Captain Rogers, "and extraordinarily civil to strangers †." When the missionary, Mr. Archbell, visited the Zoolahs, he was met at the distance of three days' journey from Chaka's residence, by women bearing calabashes of beer for his use‡. He found the Zoolahs, whose conquests have been attended with so much desolation, a remarkably neat, intelligent, and industrious people; rich in cattle, cultivating a fine country, and dwelling in large towns. The nations of the interior are no less friendly in their conduct. The European travellers who have visited the Batclapís, the Tammahas, the Murútsi, and Wankítsi, have experienced in every instance kindness and civility. Makabba, the much-dreaded chief of the last-named people, told Mr. Moffat, that "he hoped no grass would grow on the road from the Cape colony to his chief town, Quaque §." The Murútsi lamented only that Mr. Campbell had no merchandise with him. In short, it seems perfectly established, that a traveller in these countries has no reason to be under any apprehension either from the ferocity or dishonesty of the natives. "He is in no danger," says Mr. Thompson, "of being killed or ill used among them ||.

If the reports of natives, and the other authorities here drawn together, be not in a great measure deceptious, we are justified in asserting, that the most civilized nations of South Africa are situated at no great distance from Dalagôa Bay. The population of these nations also is considerable. If we suppose the whole country extending from the limits of the Cape colony to the Bazaruto Islands, with an average breadth of five hundred geographical miles inland from the sea, to be as densely peopled as the territory of the Amakosa, its total population will be about a million¶. But this is much too low an estimate, inasmuch as the Amakosa are a rude pastoral nation, and population is sure to accompany industry and cultivation; besides, the Batclapís, Murútsi, and Amakosa, all agree in pointing to the Maquaina and the nations beyond them, as examples of a remarkably numerous people: the Batclapís say, that the Kóyas, at the sources of the Orange River, are as numerous as the blades of grass, but to convey an idea of the numbers of the Maquaina, they take up handfuls of sand. On the route from Kurrichane eastward to Dalagôa Bay, seven large towns are said to occur in a journey of eight days (from seventy to eighty miles) **. It is not improbable,

* Hamilton, New Account of the East Indies, i., p. 6.

† Dampier's Voyages, ii., part iii., 112.

‡ Missionary Register, p. 49. 1830. § Philips, ii., 152. || Ib., i., 338.

¶ According to Lichtenstein, the territory of the Amakosa has 30,000 inhabitants on a surface of 16,200 square geographical miles. Thompson assumes it to be 14,000 square miles, with 100,000 inhabitants. I suppose Amakosina (or the country of the Amakosa) to have an area of 15,000 square geographical miles, and a population of 35,000.

** Campbell, i., 241.

then, that a population of two millions is contained within the limits assigned above. But these limits, it must be observed, are assumed merely for the sake of distinctness, and not as the boundaries of race, language, or commercial intercourse, which, in fact, extend across the continent to the ocean on the west, and far beyond the Zambese northward.

In the number of those tribes, all decidedly emerged from savage life, unvitiated by the system of slavery or the slave-trade, free from the peculiar virulence of African superstition, enjoying a fine soil and climate, and all speaking one common language, it is not difficult to recognise the rudiments of a great nation. They are eminently fitted to receive, and capable of rearing to maturity, the seeds of higher improvement; and what nation is better qualified to confer such a gift, or more likely to profit from it when judiciously bestowed, than the British? The most civilized nations are precisely those which have the deepest interest in the spread of civilization. To them accrue all the pleasures and advantages of increased knowledge, quickened industry, and of a field of enterprise continually enlarging, as the more rude and sequestered members of the family of mankind are more intimately connected by commercial intercourse. But it may be demanded, if tribes of such industrious and friendly manners do really exist in the vicinity of Dalagôa Bay, how does it happen that we are not already better acquainted with them? To this I reply, by referring to the physical circumstances which have hitherto prevented or discouraged seamen from navigating up the Mozambique Channel, and have induced them particularly to avoid the coast between the Cape of Good Hope and Inhamban. The Portuguese, when they obtained possession of the eastern coast of Africa, communicated with it not from Europe but from India, and, like the Arab and Indian pilots, never ventured farther south than Cape Corrientes. They knew that the natives near this headland were much superior to the inhabitants of the low country adjoining, but they never conciliated and failed to make an impression on the inland nations. They were twice defeated by the Muzimbas (whose history, by accumulated corruptions, is become nearly fabulous); they consented to pay a tribute (and I believe still continue to pay it) to the Emperor of Monomotapa, whose dominions they are not allowed to traverse; and they are carefully excluded from the high country behind Inhamban, by the prudence and independent spirit of its inhabitants*. The couriers, who pass between their factories at Dalagôa Bay, Inhamban, and Sofâla, do not penetrate the highlands, so that the Portuguese have, in reality, but few opportunities of learning the social condition of the interior, and those few opportunities are chiefly enjoyed by ignorant individuals, who are incapable of profiting from them. Dalagôa Bay has been frequented by whalers (chiefly English) for more than a century; but as they are prevented by their engagements from carrying on any traffic, they never seek such an intercourse with the

* Owen's Narrative, 302.

natives as might be productive of valuable information. English ships from India have occasionally visited those shores for cargoes of ivory and ambergris; but it is obvious that a chartered body like the East India Company is never disposed to engage in a trade so inconsiderable as not to admit of routine, nor yet to adopt with efficient zeal that generous policy which is likely to rear the timid barter of a rude people into a great commerce.

Having thus discussed the civilization of the countries between the Cape colony and the tropic, I shall now proceed to consider the geographical situation of the nations which are pre-eminent in industry and population, and the facility of reaching them. The position of Litákoo, the chief town of the Batclapís, is tolerably well ascertained, the latitude 27° 6′ 44″ S. being fixed by observation, and the longitude 24° 40′ E., calculated from several itineraries*. Eastward from the Batclapís are the Tammahas, who, enjoying a more humid climate, are superior to them in wealth and numbers, though more recently reclaimed from the bush-ranging life. Their chief town, Mashow (containing ten or twelve thousand inhabitants) is probably one hundred miles east-north-east from Litákoo †. The Murútsi are to the north-east of the Tammahas; their chief town, Kurrichane, being one hundred and fifty miles from Litákoo, according to Mr. Thompson, two hundred and fifty according to Mr. Campbell, who actually visited it. But this writer evidently miscalculates his rate of travelling. The bearings also which occur in his printed narrative, being conformed to an ill-constructed map, are in general erroneous ‡. Calculating, however, with the elements which he affords us, we may venture to place Kurrichane in long. 27° 10′ E., lat. 25° 40′ S., about one hundred and sixty geographical miles from Litákoo, and three hundred from Dalagóa Bay. The Wankítsi are probably seventy or eighty miles west or west-north-west from the Murútsi, whom they resemble in manners. Their country, which is hilly towards the east and north, though refreshed by abundant rains, is deficient in running waters. It lies apparently to the west of the sources of the rivers which flow through the country of the Murútsi. But though on opposite sides of the ridge, these countries resemble each other in the luxuriance of their vegetable productions. The waggon-tree, which, within the limits of the colony, is found to flourish only near the coast, is again seen here, after disappearing for a space of seven degrees. An increasing moisture of climate, in consequence of an approach to the sea-coast, is perceptible at every step of the journey from Litákoo to Kurrichane, in the increasing vigour and profusion of the vegetable kingdom. The harvests of the

* Burchell, ii., 488.

† Lichtenstein, Burchell, and Thompson, agree in placing the Tammahas to the east of Litákoo.

‡ Mr. Campbell seems to suppose that oxen yoked in a heavy waggon can travel, when fresh, five miles, or, for a continuance, four miles an hour. Mr. Burchell found, by careful measurements, that the ordinary rate of oxen in draught is three miles and one hundred and thirty-five yards an hour. When quite fresh they can go four miles in the same time.

Murútsi are three weeks earlier than those of the Tammahas, yet Kurrichane stands at a great absolute elevation, perhaps five thousand feet at least above the sea; it certainly cannot be lower than the plain on the north side of the Snieuwberg. The Batclapís describe it as a very cold situation; but the grass near it, they add, is extremely sweet. At Litákoo, the thermometer often sinks in winter (in June and July) to 24°, and snow falls but soon melts. Snow falls also on the highlands near the sources of the Mapoota. Cold winds from the north-east, in the country of the Tammahas, indicate a very high country in that direction*.

Numerous rivers flow rapidly towards the east and north-east through the country of the Murútsi, who are separated from the Maquaina, in the latter direction, by a great river called Makatta†. This is the river called Mariqua by the colonial traders, and which there is reason to suspect to be identical with the Mannees or King George's River of Dalagôa Bay. All the country beyond the Murútsi is said to be very populous, and full of rivers, which abound in alligators. These animals are called *Maquaina* (in the singular, *Quaina*), and probably furnish a vague designation of the people in whose country they are so numerous‡. Beyond the Maquaina (between north and east) are the Mootchooasely, Mahalasely, and Matteebeylái: the last two near the great water, that is, the sea. The Maklak, also, or Makallaka, carry beads to the Maquaina from the coast§. In all the countries here enumerated, there are many great towns as large as Kurrichane.

If, from the extent of the countries possessed by inferior tribes, such as the Batclapís and Tammahas, it be allowable to judge of the distance between the Maquaina and the Murútsi, we may assume the former to be one hundred miles east-north-east from the latter, and about two hundred miles from Dalagôa Bay, nearly in the latitude of 25° south. Now it does not appear probable that there is any hazard or formidable difficulty in this journey of two hundred miles from English River to the country of Maquaina. Guides may be easily obtained in Dalagôa Bay. The traveller, addressing himself to the chiefs, would be always sure of a hospitable reception; and among most rude nations the merchant is peculiarly respected. The climate of Dalagôa Bay is healthy after the rains, and probably is not dangerous at any season to those who do not tempt disease by their incaution. The whalers who frequent, and the Portuguese who inhabit the bay, both praise its climate. The salubrity of the high country, which commences about forty miles eastward from the coast, is not liable to any doubt.

That the rivers flowing through the countries of the Murútsi and Maquaina, and abounding in alligators, reach the sea at Dalagôa Bay, cannot be reasonably questioned. But though it would be interesting to examine those rivers carefully, and to ascertain how far they might

* Burchell, ii., 299. Campbell, ii., 90. Thompson, i., 374.
† Burchell, ii., 532. ‡ Phillips, ii., 156. Campbell, i., 242.
§ Id., i., 240, 307, 313.

be rendered available as a means of communication, yet it would probably be more expedient for a traveller, endeavouring to reach the country of the Maquaina from the coast, to take the shortest possible route, and to allow no secondary object whatever to retard his arrival among the tribes of the interior. The journey from Dalagôa Bay to the Maquaina might be easily performed with oxen in a fortnight, or in much less time by one riding them in the manner of the Hottentots. The distance between Litákoo and Kurrichane was performed by Mr. Campbell, with a heavy waggon, in nineteen days, of which he actually travelled only fourteen.

Our supposed traveller, having reached the Maquaina from the sea, would find them eager to trade with him, and well-disposed to learn the means of increasing their commerce. He might adopt their customs, and perform the simple ceremony of contracting a commercial alliance with one of their chiefs*. The industrious tribes of the interior are not insensible to gain—the mercantile character is fully developed in them; they think of nothing, says Mr. Campbell, but beads and cattle †. Their country is sufficiently rich in natural productions to support, in the first instance, a considerable traffic; they have ivory in abundance, skins of all kinds, and probably some valuable sorts of wood. The wood of the Musútsi, called mola, is said by the Batclapís to be quite black and very beautiful‡. They have copper and iron of the best quality. If the commerce of these nations reaches to Zumbo on the Zambese, as the Portuguese say, the gold trade might be easily diverted into a southern channel. Indeed, there is some reason to maintain that gold is found at no great distance from the Mahalasely §. When the Dutch, a century ago, had a factory at Dalagôa Bay, they obtained gold from a country due north from English River, apparently distant from it about seventy miles. In return, the natives would take beads, needles, cotton cloth, and blanketing or other soft woollens, of which they are in much need. The Batclapís already know the superiority of the Cape sheep over their native breeds. The Griquas possess horses; and if these, with good cattle, were imported into the wealthier countries farther to the north-east, they would no doubt prove very acceptable to a people who, with all their industry, still retain an affection for pastoral pursuits.

Fire-arms may probably be also enumerated among the articles of traffic, which might be advantageously offered to those nations, who will sooner or later inevitably obtain them, if they carry on any trade whatever with the coast. The superiority, so long and so destructively exercised by the Zoolahs, arises in no small degree from their possessing fire-arms, which they obtained from the Americans trading to Natal ||. But fire-arms have the advantage of rendering the commerce which supplies them at once necessary and secure. When

* The contracting parties pull each other's noses. † i.. 243.

‡ Campbell's First Journey, 290.

§ Barbosa (in Ramusio, i., 288) says the gold was brought to Sofála from a country south of Manica, towards the Cape of Good Hope (*i.e.*, from the south-west).

|| Bannister on Emigration.

judiciously bestowed also, so as to give a decided predominance to a comparatively civilized people, they become the means of promoting civilization. A Radama would soon spring up among the Maquaina or the neighbouring tribes, and would find in the habits of his countrymen fewer obstacles to the progress of improvement than those which thwarted the noble intentions of the Madegass Prince. But, independently of commercial calculations, it would be a measure of sound policy to promote the civilization and political strength of a nation separated from the Cape Colony by a broad barrier of desert, and a distance in a straight line of at least six hundred geographical miles. If the dominion of such a nation extended to Dalagôa Bay, it would contribute much to the repose of the tribes near the colony, by narrowing the field within which migratory revolutions could take place, and checking the long train of disturbances which are propagated from them.

But at the commencement the Maquaina might possibly trade with the coast by means of caravans. Captain Owen mentions the arrival of a caravan from the interior to Dalagôa Bay, consisting of one thousand native traders, with from three to four hundred elephants' tusks, and a great quantity of cattle *. He likewise speaks in the most encouraging manner of the dispositions of the natives of the coast, who nevertheless are inferior in every respect to those of the interior. They are, he says, partial to the British, and have a strong predilection for fair commerce; they are quiet and decorous in their manner of dealing, and utter strangers to dishonesty; their prudence will not allow them to give their merchandise for the momentary gratifications of rum or tobacco; and for cloth they have the most inordinate desire †. A similar observation was made near Cape Corrientes by Vasco de Gama, and is related by the historians of his voyage in nearly the same expressions. The natives of Dalagôa Bay would be delighted to find their country become the channel of a commercial intercourse between the British and the Maquaina, or other inland nations. That such an intercourse might be established without much risk, labour, or expense, can hardly be disputed. And how gratifying the results which might be expected from it! The improvement of those intelligent and docile tribes would soon outstrip every anticipation. The Batclapís, following the instruction of the missionaries, now practise irrigation, and exhaust the river Krúman in fertilizing their land. Many of the rising generation among them wear European clothing. They carry their merchandise to the fair of Beaufort, a journey of two or three months across a desert. The trade in hides, which the Amakosa carry on with Algoa Bay, has increased rapidly of late years ‡. The readiness to hearken to instruction manifested by the Batchapís and Amakosa (and it is worthy of notice that their chiefs will not allow the missionaries to assume any authority, although they never thwart them in the exercise of their moral in-

* Owen's Narrative, &c., ii., 20. † Ibid., pp. 127, 145, 219, &c.
‡ Bannister, Humane Policy, p. 116.

fluence) will of course be found among those northern nations, whom they represent as infinite in number and far superior to themselves in arts and social manners.

Trading adventurers from the Cape colony occasionally proceed as far as Litákoo, which is nine hundred and seventy miles distant by route from Cape Town.* The colonial merchants waste their exertions and their funds in endeavouring to establish a trade with the people of Natal, who are yet far removed from that stage of improvement which feels the necessity of trade. While, at the same time, it is almost certain that an expedition, neither costly nor hazardous—a journey of only two hundred miles from Dalagóa Bay, would conduct to a populous country, in which the civilization of the Austral-Ethiopian nations appears to be concentred; where a mercantile routine is established, and strangers are supported at the public expense; where, in short, industrious habits, and the wants which accompany some degree of refinement, both conspire to give a value to commercial pursuits. The country north-westward of Dalagóa Bay probably affords a field to commercial speculation not less ample than Súdan, but approachable with much more safety. Its inhabitants are free from the bigotry which always accompanies a tinge of Mohammedanism, and from the habitual inhumanity of the slave-trade; their manners are simple, manly, and ingenuous; and they all speak a common language, to which the labours of the missionaries have supplied a key, and which extends beyond them in all directions as far as their commerce can aspire to reach.

The design of penetrating two or three hundred miles inland from Dalagóa Bay, may to many appear too moderate for a scheme of geographical discovery, and on that account perhaps may awaken less zeal in its behalf than plans of a more difficult and dangerous nature. But let the advocate of bold efforts to explore the interior of Africa recollect how much the cause of discovery is injured by the frequent mortification and disappointment, the loss of funds and loss of life, which ensue from them. If an intimate correspondence be once established with an intelligent people, who are themselves great travellers, who are related in manners and language to the nations beyond them as far as the equator, and who are superior to perhaps all those nations in civilization, the result must be an annual income of information, far surpassing in value all that could be expected from the most adventurous expedition, however complete might be its immediate success. There is no reason to believe that the inland nations, situated to the west and north-west of Dalagóa Bay, who habitually maintain a free and unrestricted intercourse with one another, would set any restraint on the movements of a traveller in their country. He might

* Messrs. Scoon and Luckie proceeded in 1827 to Kurrichane, where they had been twice before, and then crossing the Marique, travelled first eastward and then southward a distance of 140 miles to the town of Malacatzi, a Zoolah chief, where they traded to the amount of 1800*l*. Malacatzi had sent messengers to them a distance of 200 miles with presents of oxen, to induce them to visit his country.

in the first instance, make himself acquainted with the countries drained by the rivers which flow into Dalagôa Bay. Southward, his information might reach to the Kóyas and the sources of the Orange River. As the population seems to cling pertinaciously to the highest ridges, and the very fountains from which the rivers spring, the reports of the natives, following their commercial routes, will mark out with tolerable accuracy that primary element of a good map, the partition of the waters.

The traveller, having obtained either from his own observations or the accounts of natives some knowledge of the countries more immediately encircling Dalagôa Bay, might then proceed towards Zumbo, on the Zambese, and might trace that river as far as the Portuguese fort at Tête, from which place a three weeks' voyage would bring him to Quilimane. The Zambese could not be examined with equal advantage in ascending it. The traveller, in that case, would be thwarted at every step by the Portuguese authorities; he would find, in the first instance, a degraded native population, and upon passing the boundaries of the Portuguese dominion, which at present hardly extends above Tête, he would be received with jealousy, if not with rudeness, by the inland tribes, from whom he might expect a cordial welcome if he were to arrive among them from any other quarter *. If the path from Dalagôa Bay to Zumbo were once trodden by a British traveller, the solution of the most interesting problems of African geography might be considered to be in progress; we should soon become acquainted with the route northward from the Zambese to the Murusuru, and thence westward to the Milúa, near the sources of the Coanza and the Zaire. But these distant explorations must, at present, be regarded only as the probable consequences of the success of the expedition recommended in this memoir.

The examination of the vast Savannahs of the interior, in the parallel of Dalagôa Bay, would be another of these results. A party of Batclapís, we are told, made a journey of two moons (perhaps five hundred miles) in a north-west direction from Litákoo, for the purpose of carrying off cattle from a people called Mampoor (Mamapúa?)† They were at one time ten days without water, but the plain was covered with water melons, with which they satisfied their thirst. In some places they found marshes frequented by elephants. The country through which they travelled abounded in trees, and it may be presumed in pasture, for they actually succeeded in driving thirty head of cattle back to Litákoo, their journey homeward occupying three months. If, to the particulars of this excursion, we add the circumstance that the rains at Litákoo and in the neighbouring country come from the north-west ‡, it will appear manifest that the

* A short time before the arrival of the jesuit Thoman at Tête (1759), the Portuguese factors were all expelled from the territories of a neighbouring king, and obliged even to ransom their women.—Lebensbesch, 132.

† Philips, ii., 124. Campbell's First Journey, 217. Second Journey, ii., 118.

‡ Campbell's Second Journey, i., 108; ii., 143, 198.

country in that direction is not a desert, but a vast savannah. The Mampoor live on the eastern side of a great water, and navigate in canoes to some islands near the shore. The Portuguese say, that the Cunene, or *great river*, which descends from the heights of Bihé, on the south-eastern frontiers of Benguela, towards the interior, terminates in a great lake *. The savannahs of the interior will be easily explored, whenever horses, of which the Griquas are already in possession, shall have multiplied among the nations farther to the north-east. But if we could once establish a free and friendly intercourse with the Maquaina and their neighbours, we should find them invaluable associates in the task of exploring the countries beyond them, and native hunters or traders would pioneer the way for the European traveller. It is certainly through the country of these comparatively-civilized nations alone, and with their assistance, that we can ever hope to become acquainted with the vast regions of the interior of Southern Africa, which are at present wholly unknown.

It must not be forgotten that Dr. Cowan's expedition passed through these nations; and among the motives which might be assigned for another visit to them, is that of endeavouring to obtain possession of his papers, if they still exist. That unfortunate gentleman is said to have approached within twelve days' journey of Sofâla, when he and his companions were attacked by the natives and barbarously murdered †. He had evidently entered the low country, the inhabitants of which are much less civilized than those of the highlands. The governor of Mozambique told Mr. Salt, that he thought it probable that Dr. Cowan might reach Zimbaoe, which is situated at the foot of the highlands, fifteen days westward from Sofâla, but that his further progress (to Quilimane) was impossible, owing to the number of the rivers, and the savage disposition of the people ‡.

It is needless to expatiate on the advantages which must redound to geography and every branch of natural history, from an expedition to the Maquaina from Dalagôa Bay. A country rising, within a distance of three hundred miles, from the sea-shore to an absolute elevation of five thousand feet, and lying so near the tropic, is obviously a most interesting field for the labours of the botanist. Here also the geologist would have an opportunity of examining a region which, in its chief mineral products, appears to resemble the elevated plateaus near the sources of the Coanza, of the Gambia and Senegal, and of the Nile. In fine, the expedition here proposed

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* Bowdich's Discoveries of the Portuguese, 64.—From an unpublished Memoir of M. de Souzas, who was sometime governor-general of Angola.

† Owen's Narrative, i. 319. Lieutenant Rozier informs me that some of the effects of Dr. Cowan's party were supposed to be in the possession of a king near Inhamban. Some natives of this place, trading to the interior, had seen papers and a part of a watch.

‡ Salt's Voyage to Abyssinia, 25.

would yield in the first instance, at little cost and without hazard, a large stock of valuable information, and would probably lead to consequences of far greater importance to commerce, as well as geography, than any other expedition, however bold in design or expensive in equipment, which could be directed to any other portion of the African continent.

XI.—*Regulations respecting Geographical Societies in the British Colonies or Dependencies, desirous of connecting themselves with the Royal Geographical Society of London.*

In June last, shortly after the receipt of the communication from Bombay printed in this volume, (pp. 5-11,) a special general meeting of the Royal Geographical Society of London was held, by which the following resolutions were unanimously passed.

"1. Geographical Societies established in any of the British Colonies or Dependencies, and expressing a wish to be admitted as Branches of the Royal Geographical Society in London, may be so admitted by the Council.

"2. The Members of all such of these Societies as shall correspond with the Parent Society, and forward to it Reports of their Proceedings, shall be considered Corresponding Members of the Society while out of England; and on their return home shall be eligible, by ballot, with other Corresponding Members, to be admitted Ordinary Members without payment of the entrance fee.

"3. One copy of every volume, or part of a volume, of the Society's Journal, as successively published, shall be sent to each Branch Society, to be placed in its library; with other copies for the authors of communications which may appear in such volumes; and any additional numbers which may be ordered shall be delivered in England, at two-thirds of the price, to any Agent duly authorized to receive and forward them."

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END OF VOL. III.

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